Appendices to Thesis:

The Effect of Personality on Recovery from Total Hip Replacement and Total Knee Replacement in Patients with Osteoarthritis

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This thesis has been submitted for the Degree of Doctor of Philosophy

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October 2007

Appendix 1

Glossary and Supplementary Information

Abbreviations Used in Thesis

Abbreviation	Unabbreviated phrase
CMH	Claremont Hospital
CSQ	Coping Strategies Questionnaire
HHS	Self-report Harris Hip Score
KSKS	Knee Society Knee Score
LLAU	Lower Limb Arthroplasty Unit
LOS	Length of stay
MHLC	Multidimensional Health Locus of Control
NEO-FFI	NEO Five Factor Inventory
NGH	Northern General Hospital
OA	Osteoarthritis
OHS	Oxford Hip Score
OKS	Oxford Knee Score
RA	Rheumatoid Arthritis
ROM	Range of motion
SF-36	Short Form Health Survey Questionnaire - 36
SLR	Straight leg raise
TBH	Thornbury Hospital
THA	Total hip arthroplasty
THR	Total hip replacement
TJA	Total joint arthroplasty
TJR	Total joint replacement
TKA	Total knee arthroplasty
TKR	Total knee replacement
VAS	Visual Analogue Scale
WOMAC	Western Ontario and McMaster Universities Osteoarthritis Index

Definitions of psychological variables

Psychological factor	Definition
Agreeableness	Measured with NEO-FFI. One of the big five personality factors. Adjectives describing agreeableness are: appreciative, forgiving, generous, kind, sympathetic and trusting (McCrae and John 1992).
Catastrophizing	Measured with CSQ. Defined as *"A method of cognitively coping with pain characterized by negative self-statements and overly negative thoughts about the future"* (Keefe et al. 1989)
Chance Locus of Control	Measured MHLC form C. Examines beliefs that control of condition/health is largely due to chance. Examples of items relating to chance are *'what will be will'* and *'luck will play a big part in how my knee improves'.*
Conscientiousness	Measured with NEO-FFI. One of the big five personality factors. Adjectives describing conscientiousness include efficient, organized, planful, reliable, responsible and thorough.(McCrae and John 1992)
Controlling Pain	Measured with CSQ. Assesses efficacy in controlling pain. The item for controlling pain is: *"Based on all the things you do to cope, or deal with your pain, on an average day, how much control do you feel you have over it?"* (Rosenstiel and Keefe 1983)
Coping Self Statements	Measured with CSQ. Rosenstiel and Keefe (1983) defined coping self statements as *"telling oneself that one can cope with the pain no matter how bad it gets"*. An example of an item assessing the coping strategy is: *"I tell myself to be brave and carry on despite the pain"*.

Psychological factor	Definition
Decreasing Pain	Measured with CSQ. Assesses efficacy in decreasing pain. The item for decreasing pain is: *"Based on all the things you do to cope, or deal with your pain, on an average day, how much are you able to decrease it?"* (Rosenstiel and Keefe 1983)
Diverting Attention	Measured with CSQ. A coping strategy characterised by diverting attention away from the pain. Examples of items which measure this are: *"I try to think of something pleasant"* and *"I think of people I enjoy doing things with"*. (Rosenstiel and Keefe 1983)
External Locus of Control	Measured with MHLC. Examines the belief that control of a medical condition/health is largely due to external factors. In form C used in this study, the external scale is split into two components: doctors and powerful others; and examines the impact of each.
Extraversion	Measured with NEO-FFI. One of the big five personality factors. Extraverted individuals are active, assertive, energetic, enthusiastic, outgoing and talkative (McCrae and John 1992)
Ignoring Sensations	Measured with CSQ. Rosenstiel and Keefe (1983) define ignoring sensations as "*denying that the pain hurts or affects one in any way*". An example of an item on the CSQ measuring ignoring sensations is: *"I don't think about the pain"*.
Increasing Behavioural Activities	Measured with CSQ. A coping strategy which involves carrying out other activities to divert ones mind from the pain. An example of a item measuring this is: *"I leave the house and do something such as, go to the movies or go shopping"* (Rosenstiel and Keefe 1983).

Psychological factor	Definition
Internal Locus of Control	Measured with MHLC. Examines the belief that control of a medical condition or health is largely due to ones own actions. An example of an item measuring this is: "I am directly responsible for my hip getting better or worse".
Neuroticism	Measured with NEO-FFI. One of the big five characterised by feeling of anxiousness, self-pity, tension, instability and worry.(McCrae and John 1992)
Openness to Experience	Measured with NEO-FFI. One of the big five. Individuals scoring highly on Openness to experience on the NEO-FFI tend to be artistic, curious, imaginative, insightful, original, and have wide-spanning interests (McCrae and John 1992)
Praying & Hoping	Measured with CSQ. A coping strategy which is characterised by praying or hoping for the pain to be relieved. Examples of items on the CSQ which assess this strategy are: '*I pray to God it won't last long*' and '*I have faith in doctors that someday there will be a cure for my pain*'.
Reinterpreting Pain Sensations	Measured with CSQ. Rosenstiel and Keefe (1983) define reinterpreting pain sensations as: *"imagining something, which if real, would be inconsistent with the experience of pain"*. An example of an item measuring this is: *"I don't think of it as pain but rather as a dull or warm feeling"*

References for Instruments discussed within thesis

Instrument	Reference
Arthritis Impact Measurement Scale (AIMS)	Meenan RF, Gertman PM, Mason JH. Measuring health status in arthritis: the arthritis impact measurement scales. Arthritis and Rheumatism 1980;23:146-152
Arthritis Impact Measurement Scale 2(AIMS2)	Meenan RF, Mason JH. AIMS2 Users' Guide. Boston, MA: University of Medicine, Department of Public Health, 1990.
Arthritis Self Efficacy Scale	Lorig K, Chastain RL, Ung E, Shoor S, Holman HR. Development and evaluation of a scale to measure perceived self-efficacy in people with arthritis. Arthritis and Rheumatism 1989;32:37-45.
Chronic Pain Coping Inventory	Jensen MP, Turner JA, Romana JM, Strom SE. The Chronic Pain Coping Inventory: development and preliminary validation. Pain 1995;60:203-216
Coping Measures Questionnaire	Billings AG, Moos RH. The role of coping responses and social resources in attenuating the stress of life events. Journal of Behavioural Medicine 1981;4:139-157
Coping Strategy Indicator	Amirkhan JH. A factor analytically derived measure of coping: The Coping Strategy Indicatory. Journal of Personality and Social Psychology 1991;59:1066-1074
Coping Strategies Questionnaire	Rosenstiel AK, Keefe FJ. The Use of Coping Strategies in Chronic Low Back Pain Patients: Relationship to Patient Characteristics and Current Adjustment. Pain 1983;17:33-44.

Instrument	Reference
EuroQol	EuroQol group. EuroQol - a new facility for the measurement of health-related quality of life. Health Policy 1990;16:199-208
Eysenck's Personality Inventory	Eysenck SBG, Eysenck HJ, Barrett P. A Revised Version of the Psychoticism Scale. Personality and Individual Differences 1985;6:21-29
Harris Hip Score (HHS)	Harris WH. Traumatic Arthritis of the Hip after Dislocation and Acetabular Fractures: Treatment by Mold Arthroplasty. Journal of Bone and Joint Surgery (American) 1969;51-A:737-755
Health Assessment Questionnaire	Fries JF, Spitz PW, Kraines RG, Holman HR. Measurement of patient outcome in arthritis. Arthritis and Rheumatism 1980;23:137-145
Health Locus of Control Questionnaire (HLC)	Wallston BS, Wallston KA, Kaplan GD, Maides SA. Development and Validation of the Health Locus of Control (HLC) Scale. Journal of Consulting and Clinical Psychology 1976;44:580-585
Hospital Anxiety and Depression Scale (HADS)	Zigmund AS, Snaith RP. The Hospital Anxiety and Depression Scale. Acta Scandinavica 1983;67:361-370
International Personality Item Pool (IPIP)	Goldberg LR. An Alternative "Description of Personality": The Big-Five Factor Structure. Journal of Personality and Social Psychology 1990;59:1216-1229.
Knee Injury Osteoarthritis Outcome Scale (KOOS)	Roos EM, Roos HP, Lohmander LS, Ekdahl C, Beynnon BD. Knee Injury and Osteoarthritis Outcome Score (KOOS) development of a self-administered outcome measure. Journal of Orthopaedic and Sports Physical Therapy 1998;78:89-96.

Instrument	Reference
Knee Society Knee Score (KSKS)	Insall JN, Dorr LD, Scott RD, Scott WN. Rationale of The Knee Society Clinical Rating System. Clinical Orthopaedics and Related Research 1989;248:13-14.
Locus of Control Scale	Rotter JB. Generalized expectancies for internal versus external control of reinforcement. Pychological Monographs 1966;80:1-28
Lower Extremity Activity Profile (Finch and Kennedy 1995)	Finch E, Kennedy D. The lower extremity activity profile: a health status instrument for measuring lower extremity disability. Physiotherapy Canada 1995;47:239.
McGill Pain Questionnaire	Melzack R. The McGill pain questionnaire: major properties and scoring methods. Pain 1975;1:277-299.
Multi-Dimensional Health Locus of Control Questionnaire (MHLC)	Wallston KA, Wallston BS, DeVellis R. Development of the Multidimensional Health Locus of Control (MHLC) Scales. Health Education Mongraphs 1978;6:160-170
Multi-Dimensional Health Locus of Control Questionnaire (MHLC) Form C	Wallston KA, Stein MJ, Smith CA. Form C of the MHLC scales: a condition-specific measure of locus of control. Journal of Personailty Assessment 1994;63:534-553.
Myer-Briggs Type Indicator	Myers IB, McCaulley MH. *Manual: A Guide to the Development and Use of the Myers-Briggs Type Indicator.* Palo Alto, CA: Consulting Psychologists Press, 1985
NEO Five Factor Inventory	Costa PT, McCrae RR. Revised NEO Personality Inventory (NEO PI-R) and NEO- Five Factor Inventory (NEO-FFI) Professional Manual Psychological Assessment Resources, Inc., 1992.

Instrument	Reference
NEO Personality Inventory – Revised	Costa PT, McCrae RR. Revised NEO Personality Inventory (NEO PI-R) and NEO- Five Factor Inventory (NEO-FFI) Professional Manual Psychological Assessment Resources, Inc., 1992.
New Zealand Score	Haydon DC, Holmes AC. The New Zealand priority criteria project. Part 1: Overview. British Medical Journal 1997;314:131-134
Nottingham Health Profile (NHP)	Hunt SM, McEwan J, McKenna SP. Measuring Health Status. London: Croom Helm, 1986.
Oxford Hip Score (OHS)	Dawson J, Fitzpatrick R, Carr A, Murray D. Questionnaires on the perceptions of patients about total hip replacement. Journal of Bone and Joint Surgery (British) 1996;78-B:185-190
Oxford Knee Score (OKS)	Dawson J, Fitzpatrick R, Murray D, Carr A. Questionnaire on the perception of patients about total knee replacement. Journal of Bone and Joint Surgery (British) 1998;80-B:63-69.
Pain Catastrophizing Scale	Sullivan MJ, Bishop S, Pivik J. The pain catastrophizing scale; development and validation. Psychological Assessment 1995;7:524-532.
Recovery Locus of Control Questionnaire	Partridge C, Johnston M. Perceived control and recovery from physical disability: Measurement and prediction. British Journal of Clinical Psychology 1989;28:53-59
Self-Report Harris Hip Score	Mahomed NN, Arndt DC, McGrory BJ, Harris WH. The Harris Hip Score. Comparison of Patent Self-Report With Surgeon Assessment. Journal of Arthroplasty 2001;16:575-580.
SF-36	Ware JE, Snow KK, Kosinski M, Gandek B. SF-36 Health Survey: Manual and Interpretation Guide. Boston, MA: The Health Institute, New England Medical Center, 1993

Instrument	Reference
Sickness Impact Profile (SIP)	Bergner, M., Bobbitt, R.A., Pollard, W.E., Gilson, B.S. (1981) The Sickness Impact Profile: development and final revision of a health-status measure. Medical Care 19: 787-805
State Trait Anxiety Inventory (STAI)	Spielberger CD, Gorsuch RL, Luchene RE. Manual for the State-Trait Anxiety Inventory Revised Edition. Palo Alto, CA: Consulting Psychologists Press, 1983.
Tridimensional Personality Inventory	Cloninger CR, Svrakic DM, Przybeck TR. A Psychobiological Model o Temperament and Character. Archives of General Psychiatry 1993;50:975-990.
Ways of Coping Questionnaire	Folkman S, Lazarus RS. Manual of the Ways of Coping Questionnaire. Palo Alto, CA: Consulting Psychologists Press, 1988
Western Ontario and McMaster Universities Arthritis Index (WOMAC)	Bellamy N, Buchanan WW, Goldsmith CH, Campbell J, Stitt LW. Validation study of WOMAC: a health status instrument for measuring clinically important patient relevant outcomes to antirheumatic drug therapy in patients with osteoarthritis of the hip or knee. Journal of Rheumatology 1988;15:1833-1840.

Details of studies included in literature review

Author & Year of publication	Title of Paper	Number of participants	Setting	Country	Study type	Strengths and Weaknesses
Andrerson & Felson (1988)	Factors associated with osteoarthritis of the knee in the first national Health and Nutrition Examination Survey (HANES I). Evidence for an association with overweight, race, and physical demands at work	5, 193 study participants (315 with OA)	Community dwelling adults	USA	Cross-sectional analysis of previously collated data	Strengths: • Good sample size Weaknesses: • Cross-sectional therefore causation cannot be inferred • Retrospective design
Ayers et al. (2004)	Psychological Attributes of Preoperative Total Joint Replacement Patients. Implications for Optimal Physical Outcome	107 of which 100 with complete data	Patients undergoing THR/TKR	USA	Survey; regression analysis	Weaknesses: • THR and TKR patients combined in analysis • Small sample size

Author & Year of publication	Title of Paper	Number of participants	Setting	Country	Study type	Strengths and Weaknesses
Bayley et al. (1995)	Measuring the Success of Treatment in Patient Terms	211 THR, 128 TKR	Patients undergoing THR/TKR	USA	Survey; regression analysis	Strengths: • Reasonable sample size Weaknesses • Outdated instrument used to assess knee impairment (Hospital Special Services Knee Scores), • Change in health status from pre- to post-operatively calculated for whole group rather than individual patients

Author & Year of publication	Title of Paper	Number of participants	Setting	Country	Study type	Strengths and Weaknesses
Berge et al. (2004)	Pre-operative and post-operative effect of a pain management programme prior to total hip replacement: a randomized controlled trial	40 THR patients	Patients with at least 6-months wait for THR	UK	RCT	Strengths: • Excellent methodology Weaknesses: • Small Sample size • The follow-up is at one-year post intervention rather than post-surgery therefore wide variability (2-12 months in time since THR)
Booth-Kewley & Vickers (1994)	Associations between Major Domains of Personality and Health Behaviour	Study 1: 103 Study 2: 76	Navy Personnel	USA	Survey; correlation analysis	Strengths • Uses NEO-FFI Weaknesses • Sample may not be representative of general population

Author & Year of publication	Title of Paper	Number of participants	Setting	Country	Study type	Strengths and Weaknesses
Bremmer-Smith et al. (2004)	Knee scores in a 'normal' elderly population	100	Community dwelling older adults with no history of knee, hip, spine or lower lib disorder.	UK	Survey	Weaknesses: • The majority of the sample (76%) was women • A crude measurement of co-morbidity was used • The surgeon assessing the knee scores was not blinded to the purpose of the study.
Brinker et al. (1996)	Demographic Biases Found in Scoring Instruments if Total Hip Arthroplasty	200	Community dwelling adults with no prior history of injury, pathologic condition, or treatment of the hips, knees, lower extremities, or spine.	USA	Correlational study	Strengths: • Adequate sample size Weaknesses: • The majority of the sample (71%) were women • Unknown whether the assessors were blinded to study purpose

Author & Year of publication	Title of Paper	Number of participants	Setting	Country	Study type	Strengths and Weaknesses
Brinker et al. (1997)	Demographic Biases of Scoring Instruments for the Results of Total Knee Arthroplasty	200	Community dwelling adults with no history of injury, abnormality, or treatment of the knees, hips, lower extremities or spine.	USA	Correlational study	Strengths: • Adequate sample size Weaknesses: • The majority of the sample (71%) were women Unknown whether the assessors were blinded to the purpose of the study
Buer & Linton (2002)	Fear avoidance beliefs and catastrophizing: occurrence and risk factors in back pain and ADL in the general population	949	Random sample of adults selected from the Swedish census	Sweden	Cross-sectional study; regression analysis	Strengths • Good sample size • Good sampling strategy

Author & Year of publication	Title of Paper	Number of participants	Setting	Country	Study type	Strengths and Weaknesses
Butler et al. (1996)	Prehospital education with total hip replacement surgery patients	123	Patients undergoing THR	Canada	Survey study	Weaknesses: • The intervention (an education booklet) took place prior to recruitment of patients. • After recruitment, a larger percentage of patients had to be excluded due to previous experience of joint replacement.
Caracciolo & Giaquinto (2005)	Determinants of subjective functional outcome of total joint arthroplasty	100: 47 THR, 53 TKR	TKR and THR inpatients who had a TJR as a result of OA and age-matched out-patients	Italy	Survey study; regression analysis	Strengths: • Good choice of instruments (WOMAC) Weaknesses: • Patients were recruited post-surgery. • Relatively small sample size

Author & Year of publication	Title of Paper	Number of participants	Setting	Country	Study type	Strengths and Weaknesses
Crisson and Keefe (1998)	The relationship of locus of control to pain coping strategies and psychological distress in chronic pain patients	62	Chronic pain patients	USA	Survey study, correlation and regression analyses	Weaknesses: • Small sample size • Convenience sampling strategy
Cross et al. (2006)	Patient self-efficacy and health locus of control: relationships with health status and arthritis-related expenditure	293	Community dwelling adults with OA or RA	Australia	Survey study; correlational analysis.	Strengths: • Good choice of instruments (WOMAC, SF-36) Weaknesses: • The majority of the sample (84%) with Rheumatoid Arthritis were women • Could have been improved by completing a regression analysis

Author & Year of publication	Title of Paper	Number of participants	Setting	Country	Study type	Strengths and Weaknesses
Crowe (2003)	Pre-arthroplasty rehabilitation is effective in reducing hospital stay	11	Patients awaiting THR or TKR with complex needs e.g. functional dysfunction, co-morbidity, limited social support	Canada	RCT	Strengths: • Excellent study design Weaknesses: • The intervention is tailored to each patient making it difficult to assess which components are effective. • Change in LOS reflection of better discharge planning in intervention group.
Davis et al. (2006)	Predictors of Functional Outcome Two Years Following Revision Hip Arthroplasty	126	Patients undergoing hip revision arthroplasty	Canada	Survey study; regression analysis	Strengths: • Good choice of instruments (WOMAC, SF-36) • Adequate sample size • Appropriate statistical tests

Author & Year of publication	Title of Paper	Number of participants	Setting	Country	Study type	Strengths and Weaknesses
Doering et al. (2000)	Videotape Preparation of Patients Before Hip Replacement Reduces Stress	100 THR	Patients undergoing THR	Austria	RCT	Strengths: • Excellent study design • Measurement of stress and anxiety with both questionnaires and physiological markers • Appropriate analysis
Duberstein et al. (2003)	Personality is Associated with Perceived Health and Functional Status in Older Primary Care Patients	265	Elderly primary care medical patients	USA	Survey & interviews; regression analysis	Strengths: • Good sampling technique • Uses NEO-FFI • Appropriate statistical analyses Weaknesses: • A greater proportion of the sample were female

Author & Year of publication	Title of Paper	Number of participants	Setting	Country	Study type	Strengths and Weaknesses
Eisler et al. (2002)	Patient Expectation and Satisfaction in Revision in Total Hip Arthroplasty	98	Patients undergoing revision THR	Sweden	Survey study, factor analysis, regression analysis.	Strengths: • Prospective study • Appropriate statistical analysis Weaknesses: • Patient expectation assessed only in terms of pain and walking ability
Epps (2004)	Length of Stay, Discharge Disposition, and Hospital Charge Procedures	166	Retrospective study analysing notes of patients who had undergone THR or TKR	USA	Regression analysis	Strengths • Appropriate statistical analyses Weaknesses: • Retrospective design • The majority of the sample were women (77%)

Author & Year of publication	Title of Paper	Number of participants	Setting	Country	Study type	Strengths and Weaknesses
Forrest et al. (1998)	Factors affecting length of stay and need for rehabilitation after hip and knee arthroplasty	125	Patients undergoing THR or TKR	USA	Correlation study	Strengths: • Acceptable sample size Weaknesses: • Retrospective using hospital notes therefore may be unreliable • No regression analyses

Author & Year of publication	Title of Paper	Number of participants	Setting	Country	Study type	Strengths and Weaknesses
Fortin et al. (1999)	Outcomes of Total Hip and Knee Replacement: Preoperative Functional Status Predicts Outcome at Six Months After Surgery	222	Patients undergoing THR or TKR as a result of OA	Canada & USA	Regression analysis	Strengths: • Good choice of measures (WOMAC, SF-36) Weaknesses • A greater proportion of the participants were women • A median split was performed on the WOMAC function scale to categorise patients as to high or low function. This does not take into consideration actual level of function.

Author & Year of publication	Title of Paper	Number of participants	Setting	Country	Study type	Strengths and Weaknesses
Gammon & Mullholland (1996)	Effect preparatory information prior to elective total hip replacement on psychological coping outcomes	82	Patients undergoing THR	UK	Intervention study	Strengths: • Appropriate statistical analysis Weaknesses: • Allocation to study group was not random • Coping was measured with a non-validated linear analogue scale

Author & Year of publication	Title of Paper	Number of participants	Setting	Country	Study type	Strengths and Weaknesses
Gocen et al. (2004)	The effect of preoperative physiotherapy and education on the outcome of total hip replacement: a prospective randomized controlled trial	59	Patients undergoing THR	Turkey	RCT	Strengths: • Excellent study design • Appropriate statistical analysis Weaknesses: • Intervention involved both physiotherapy and education therefore difficult to assess the effectiveness of each component • Functional outcome only assessed with HHS.

Author & Year of publication	Title of Paper	Number of participants	Setting	Country	Study type	Strengths and Weaknesses
Greenfield et al. (1993)	The importance of co-existent disease in the occurrence of post-operative complications and one-year recovery in patient undergoing total hip replacement. Comorbidity and outcomes after total hip replacement	356	Patients undergoing THR	USA	Regression analysis	Strengths: • Adequate sample size • Appropriate statistical analysis Weaknesses: • Retrospective study

Author & Year of publication	Title of Paper	Number of participants	Setting	Country	Study type	Strengths and Weaknesses
Härkäpää et al. (1991)	Health locus of control beliefs and psychological distress as predictors for treatment outcome in low-back pain patients: results of a 3-month follow-up of a controlled intervention study	459	Community dwelling adults employed by the Finnish Railways and Telecommunications Establishment with chronic low back pain	Finland	Regression analysis	Strengths: • Good sample size • Appropriate statistical analyses Weaknesses: • Sample may not be representative of population • A greater proportion of the sample (63%) was male • Outdated measure of locus of control used.

Author & Year of publication	Title of Paper	Number of participants	Setting	Country	Study type	Strengths and Weaknesses
Härkäpää et al. (1991)	Associations of locus of control beliefs with pain coping strategies and other pain-related cognitions in back pain	76	Patients attending a rehabilitation clinic for back pain	Finland	Regression analysis	Strengths: • Appropriate statistical analyses Weaknesses • Small sample size • Outdated measure of locus of control used
Hawker et al. (2000)	Differences between Men and Women in the Rate of Use of Hip and Knee Arthroplasty	2, 352 In phase 2)	Community dwelling older adults with self-reported arthritis	Canada	Postal Questionnaire	Strengths: • Excellent sampling strategy • Good choice of instruments (WOMAC) • Appropriate statistical analyses

Author & Year of publication	Title of Paper	Number of participants	Setting	Country	Study type	Strengths and Weaknesses
Haythornthwaite et al. (1998)	Pain coping strategies predict perceived control over pain	195	Patients admitted to an inpatient multidisciplinary chronic pain rehabilitation programme	USA	Regression analysis	Strengths • Good sample size • Appropriate statistical analyses • Uses CSQ Weaknesses: • Convenience sampling strategy • A greater proportion (65%) of the participants were female
Hill et al. (1995)	The role of coping in adjustment to phantom limb pain	228	Patients with amputations registered at a limb fitting centre in Glasgow	Scotland	Regression analysis	Strengths: • Acceptable sample size • Appropriate statistical analyses • Uses CSQ • The majority of participants were male (73%)

Author & Year of publication	Title of Paper	Number of participants	Setting	Country	Study type	Strengths and Weaknesses
Holtzman et al. (2002)	Effect of Baseline Functional Status and Pain on Outcomes of Total Hip Arthroplasty	1120	Patients undergoing THR as a result of OA	USA	Survey study	Strengths: • Excellent sample size • Appropriate analysis • Weaknesses: • Unusual choice of outcome measure
Hopman et al. (1999)	Determinants of Health-Related Quality of Life Following Elective Total Hip Replacement	68	Patients undergoing THR	Canada	Survey study; regression analysis	Strengths: • Appropriate outcome measures • Outcome evaluated using individual patient scores Weaknesses: • Small sample size

Author & Year of publication	Title of Paper	Number of participants	Setting	Country	Study type	Strengths and Weaknesses
Järvholm et al. (2005)	Age, body weight, smoking habits and the risk of severe osteoarthritis in the hip and knee in men	320, 192	Swedish construction industry workers	Sweden	Analysis of previously collated data	Strengths: • Excellent sample size • Appropriate statistical analysis Weaknesses: • Sample entirely male construction workers therefore may not be representative
Jerram & Coleman (1999)	The big five personality traits and reporting of health problems and health behaviour in old age	50	Community dwelling older adults who attended one of four GP clinics in Southampton	UK	Correlation and regression analysis	Strengths: • Good sampling strategy • Uses NEO-FFI Weaknesses: • Small Sample • Regression analysis is not appropriate for such a small sample size.

Author & Year of publication	Title of Paper	Number of participants	Setting	Country	Study type	Strengths and Weaknesses
Johnson et al. (1989)	Modifiers of patient-controlled analgesia	76	Patients undergoing abdominal and gynaecological surgical procedures	USA	Correlation and regression analysis.	Strengths: • Uses appropriate measure of locus of control (MHLC) Weaknesses: • Small sample size
Johnsson & Thorngren (1989)	Function after total hip replacement for primary osteoarthritis	505	Patients with surviving total hip replacements for osteoarthritis 4 to 14 years after implantation.	Sweden	Survey study; regression analysis	Strengths: • Large sample size Weaknesses: • Retrospective study • Details of questionnaire not provided • Length of time between implantation and follow-up hugely variable (4-14 years)

Author & Year of publication	Title of Paper	Number of participants	Setting	Country	Study type	Strengths and Weaknesses
Keefe et al. (1987)	Pain coping strategies in osteoarthritis patients	51	Patients with osteoarthritis of the knees	USA	Survey, regression analysis.	Strengths: • Uses appropriate measures (CSQ, McGill Pain Questionnaire) Weaknesses: • Small sample size • Greater proportion of participants were women (67%) • Analyses may not be appropriate for small sample size

Author & Year of publication	Title of Paper	Number of participants	Setting	Country	Study type	Strengths and Weaknesses
Keefe et al. (1987)	Osteoarthritic knee pain: a behavioural analysis	87	Patients with chronic pain as a result of knee OA	USA	Survey, regression analysis	Strengths: • Uses CSQ • Acceptable sample size Weaknesses: • Greater proportion of participants were women (71%) • Unknown whether observer recording pain behaviours was blinded to the purpose of the study.

Author & Year of publication	Title of Paper	Number of participants	Setting	Country	Study type	Strengths and Weaknesses
Keefe et al. (1989)	Coping with rheumatoid arthritis pain: catastrophizing as a maladaptive strategy	223	Patients with RA	USA	Survey, regression analysis	Strengths: • Acceptable sample size • Good choice of instruments (CSQ, AIMS) • Appropriate statistical analyses Weaknesses: • 75% of the sample was female
Keefe et al. (1990)	A Comparison of Coping Strategies in Chronic Pain Patients in Different Age Groups	88	Chronic pain patients referred to a pain management programme	USA	Survey study	Strengths: • Acceptable sample size • Appropriate outcome measures • Appropriate sampling technique • Appropriate statistical analysis

Author & Year of publication	Title of Paper	Number of participants	Setting	Country	Study type	Strengths and Weaknesses
Keefe et al. (2000)	The relationship of gender to pain, pain behaviour, and disability in osteoarthritis patients: the role of catastrophizing	168	Community dwelling adults with OA of the knees	USA	Survey study	Strengths: • Acceptable sample size • Appropriate outcome measures • Appropriate sampling technique • Appropriate statistical analysis
Kendall et al. (2001)	Psychological factors associated with short-term recovery from total knee replacement	42	Patients undergoing TKR	UK	Survey, Regression analysis	Strengths: • Pilot study in the area of study for PhD research Weaknesses: • Small sample size • Vast number of variables included in the regression analysis not supported by the small sample size • Inappropriate measure of LOC

Author & Year of publication	Title of Paper	Number of participants	Setting	Country	Study type	Strengths and Weaknesses
Kennedy et al. (2002)	Comparison of Gender and Group Differences in Self-Report and Physical Performance Measures in Total Hip and Knee Arthroplasty Candidates	1805	Patients undergoing THR or TKR	Canada	Survey, correlation and regression analysis	Strengths: • Excellent sample size • Appropriate statistical analysis Weaknesses: • Unusual choice for measuring function (Lower Extremities Activities Profile)

Author & Year of publication	Title of Paper	Number of participants	Setting	Country	Study type	Strengths and Weaknesses
Lemos-Giráldez & Fidalgo (1997)	Personality dispositions and health-related habits and attitudes: a cross-sectional study	1184	Students from 12 different universities	Spain	Survey, Regression analysis	Strengths: • Excellent sample size • Uses NEO PI-R • Appropriate statistical analyses Weaknesses: • Sample may not be representative of general population • Uses HLC to measure locus of control (LOC) which assumes LOC is uni-dimensional

Author & Year of publication	Title of Paper	Number of participants	Setting	Country	Study type	Strengths and Weaknesses
Lim et al. (2006)	The effect of preoperative symptom severity on functional outcomes of total knee replacement – patients with the lowest preoperative scores achieve the lowest marks	45	Patients undergoing TKR as a result of OA but with no OA in other joints	UK	Correlational study	Weaknesses: • Small sample size • OKS scored incorrectly (authors state worst 0, best 48. Should be scored 12-60 with 12 best function
Lingard et al. (2004)	Predicting the Outcome of Total Knee Arthroplasty	860	Patients undergoing TKR	UK, USA & Australia	Regression analysis	Strengths: • Good sample size • Good choice of instruments (WOMAC, SF-36) • Study spans three continents • Appropriate statistical analyses

Author & Year of publication	Title of Paper	Number of participants	Setting	Country	Study type	Strengths and Weaknesses
MacWilliam et al. (1996)	Patient-Related Risk Factors That Predict Poor Outcome after Total Hip Replacement	442	Patients undergoing THR	USA	Survey study; regression analysis.	Strengths: • Good sample size • Appropriate statistical analyses Weaknesses: • Unusual Choice of outcome measure (The Hip TyPE from the Outcome Management System)
Mahomed et al. (2002)	The Importance of Patient Expectations in Predicting Functional Outcomes After Total Joint Arthroplasty	191	Patients undergoing THR or TKR	USA & Canada	Survey, regression analysis	Strengths: • Acceptable sample size • Good choice of instruments (WOMAC, SF-36) Weaknesses: • Measurement of expectations arbitrary: VAS and then dichotomised into high vs. low

Author & Year of publication	Title of Paper	Number of participants	Setting	Country	Study type	Strengths and Weaknesses
Mancuso et al (1997)	Patients' Expectations and Satisfaction With Total Hip Arthroplasty	180	Patients who had previously undergone THR	USA	Interview and ANOVA	Strengths: • In depth assessment of patient expectations Weaknesses: • Retrospective study asking patients to recall expectation 2-3 years post-surgery therefore may be unreliable.

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Author & Year of publication	Title of Paper	Number of participants	Setting	Country	Study type	Strengths and Weaknesses
Marshall et al. (1994)	The Five-Factor Model of Personality as a Framework for Personality-Health Research	Study 1: 296 Study 2: 502	Male military recruits	USA	Factor analysis	Strengths: • Acceptable sample size • Appropriate statistical analysis • Uses NEO-FFI • Suggests a framework for personality-health research Weaknesses: • Sample may not be representative of general population

Author & Year of publication	Title of Paper	Number of participants	Setting	Country	Study type	Strengths and Weaknesses
McDonald et al. (2004)	Pre-operative education for hip or knee replacement (review)	9 studies	RCT of preoperative education in patients undergoing THR/TKR	n/a	Systematic review	Strengths: • Excellent study design • Good search strategy • Good inclusion criteria Weaknesses: • Further RCT have been conducted in this area since publication
McGregor et al. (2004)	Does preoperative hip rehabilitation advice improve recovery and patient satisfaction	35	Patients undergoing THR	UK	RCT	Strengths: • Excellent study design • Good choice of outcome measures Weaknesses: • Small sample size

Author & Year of publication	Title of Paper	Number of participants	Setting	Country	Study type	Strengths and Weaknesses
McMurray et al. (2002)	Health-related quality of life and health service use following total hip replacement surgery	95	Patients undergoing THR	Australia	Survey study	Strengths: • Good choice of outcome measure (SF-36) • Appropriate statistical analyses Weaknesses: • No pre-operative measures taken
Mondloch et al. (2001)	Does how you do depend on hoe you think you'll do? A systematic review of the evidence for a relation between patients' expectations and health outcomes	"Relevant articles contained original research data, measured patients' recovery expectations, independently measured a subsequent health outcome and analyzed the relation between expectations and outcomes" (Mondloch et al. 2001)		n/a	Systematic review	Strengths: • Excellent methodology • Good criteria for assessment of quality of papers Weaknesses: • As the scope was wide-ranging, interpreting the results is difficult.

Author & Year of publication	Title of Paper	Number of participants	Setting	Country	Study type	Strengths and Weaknesses
Nikolajsen et al. (2006)	Chronic pain following total hip arthroplasty: a nationwide questionnaire study	1048	Patients 12-18 months post-THR	Denmark	Survey study; regression analysis	Strengths: • Excellent sample size • Good sampling strategy Weaknesses: • No standard instrument used to assess impact on daily activities • Retrospective therefore no measure of pre-operative pain

Author & Year of publication	Title of Paper	Number of participants	Setting	Country	Study type	Strengths and Weaknesses
Orbell et al. (1998)	Health benefits of joint replacement surgery for patients with osteoarthritis: prospective evaluation using independent assessments in Scotland	107	Patients undergoing THR/TKR	UK	Survey and interview study	Strengths: • Prospective design • Variety of measures used to assess pain Weaknesses: • Ability to complete activity was a very crude measure: it assessed by interviewer and dichotomised into either has or hasn't completed in last month.

Author & Year of publication	Title of Paper	Number of participants	Setting	Country	Study type	Strengths and Weaknesses
Partridge & Johnson (1989)	Perceived control of recovery from physical disability: Measurement and prediction	40	Patients who had suffered stroke or fractured wrist	UK	Correlational study	Weaknesses: • Small sample size • Majority of sample women (80%) • No demographic details of the patients used to develop the instrument (RLOC scale) • RLOC developed for patients recovering from stroke or physical disability – however, needs and recovery pattern likely to be very different • Assumes LOC is unidimensional

Author & Year of publication	Title of Paper	Number of participants	Setting	Country	Study type	Strengths and Weaknesses
Peerbhoy et al. (1999)	The systematic assessment of short-term functional recovery after major joint arthroplasty	163	Patients undergoing THR or TKR	UK	Correlational study	Strengths: • Acceptable sample size of THR patients • Good descriptive study of time taken to achieve key physiotherapy milestones Weaknesses: • Small sample size of TKR patients

Author & Year of publication	Title of Paper	Number of participants	Setting	Country	Study type	Strengths and Weaknesses
Peters et al. (2005)	The joint contribution of physical pathology, pain-related fear and catastrophizing to chronic back pain disability	100	Low back patients attending pain management clinic	Holland	Survey, regression analysis	Strengths: • Acceptable sample size • Good choice of instruments • Appropriate statistical analysis Weaknesses: • Convenience sampling strategy of patients attending pain management clinic therefore many not be representative of population.

Author & Year of publication	Title of Paper	Number of participants	Setting	Country	Study type	Strengths and Weaknesses
Peters et al. (2005)	Factors associated with change in pain and disability over time	2, 437 at baseline, 587 followed up.	Community dwelling adults with self-reported hip or knee problems registered with selected GPs in Avon and Somerset.	UK	Prospective community-based cohort study.	Strengths: • Good sample size • Good sampling strategy Weaknesses: • Unusual choice of instrument (New Zealand) not used commonly and therefore does not allow comparison with other studies
Rapp et al. (2000)	Physical function among older adults with knee pain: The role of pain coping skills	394	Elderly patients with knee pain	USA	Correlation study	Strengths: • Good sample size

Author & Year of publication	Title of Paper	Number of participants	Setting	Country	Study type	Strengths and Weaknesses
Roach (1994)	A preoperative assessment and education program: implementation and outcomes	463	Patients undergoing THR/TKR	USA	Intervention study	Weaknesses: • No randomisation process: all patients undergoing TJA were offered education, comparison were made between those who did and didn't choose to participate – may be confounding factors
Rosenstiel & Keefe (1983)	The Use of Coping Strategies in Chronic Low Back Pain Patients: Relationship to Patient Characteristics and Current Adjustment	61	Patients with chronic low back pain referred for behavioural treatment	USA	Development of questionnaire, factor analysis	Strengths: • Appropriate statistical analyses Weaknesses: • Small sample size • Majority of sample female (69%)

Author & Year of publication	Title of Paper	Number of participants	Setting	Country	Study type	Strengths and Weaknesses
Roush (1985)	Patient-Perceived Functional Outcomes Associated with Elective Hip and Knee Arthroplasties	43	Patients 6 to 35 months post-THR/TKR	USA	Survey study	Weaknesses: • Small sample size • Large variability in length of time after surgery (6-35 months) • Unusual method of recording change in level of activities of daily living • Retrospective: no pre-operative measure
Santavirta et al. (1994)	Teaching of patients undergoing total hip replacement surgery	60	Patients undergoing THR	Finland	RCT	Strengths: • Good study design • Appropriate statistical analysis Weaknesses: • Non-validated outcome measures

Author & Year of publication	Title of Paper	Number of participants	Setting	Country	Study type	Strengths and Weaknesses
Selman (1989)	Impact of Total Hip Replacement on Quality of Life	46	Patients 12-24 months post-THR	USA	Survey study	Strengths: • Acceptable outcome measure (AIMS) Weaknesses: • Retrospective: no pre-operative measure • Small sample size
Severeijns et al. (2001)	Pain Catastrophizing Predicts Pain Intensity, Disability, and Psychological Distress Independent of the Level of Physical Impairment	211	Patients with chronic pain attending a pain management clinic	Holland	Correlation and regression analyses	Strengths: • Good sample size • Good choice of instruments • Appropriate statistical analysis Weaknesses: • Greater proportion of sample women (65%) • Convenience sampling strategy

Author & Year of publication	Title of Paper	Number of participants	Setting	Country	Study type	Strengths and Weaknesses
Shaw et al. (2003)	The relationship of perceived control to outcomes in older women undergoing surgery for fractured neck of femur	112	Women undergoing surgery for fractured neck of femur	UK	Regression analysis	Strengths: • Acceptable sample size • Appropriate statistical analyses • Weaknesses: • No interview pre-surgery • Used RLOC as measure of LOC which assumes LOC is unidimensional

Author & Year of publication	Title of Paper	Number of participants	Setting	Country	Study type	Strengths and Weaknesses
Sieggiersdottir et al. (2005)	Short hospital stay augmented with education and home-based rehabilitation improves function and quality of life after hip replacement	50	Patients undergoing THR	Iceland	RCT	Strengths: • Excellent study design • Appropriate outcome measures • Appropriate statistical analysis Weaknesses: • Intervention combines both pre-operative education and post-operative home-based rehabilitation therefore difficult to ascertain which component is effective in altering outcome.

Author & Year of publication	Title of Paper	Number of participants	Setting	Country	Study type	Strengths and Weaknesses
Snow-Turek et al. (1996)	Active and passive coping strategies in chronic pain patients	76	Patients with chronic pain referred to pain management clinic	USA	Study to assess validity and reliability of measures of coping	Strengths: • Good choice of instruments • Appropriate statistical analyses although sample size may be too small to support it Weaknesses: • Small sample size • Low participation rate in study (36% of those invited)
Sullivan et al. (1998)	Catastrophizing, pain and disability in patients with soft tissue injuries	86	Patients with soft tissue injuries attending pain clinic	Canada	Regression analysis	Strengths: • Good choice of instruments • Appropriate statistical analyses Weaknesses: • Majority of sample female (69%)

Author & Year of publication	Title of Paper	Number of participants	Setting	Country	Study type	Strengths and Weaknesses
Sullivan et al. (2005)	Dimensions of catastrophic thinking associated with pain experience and disability in patients with neuropathic pain conditions	80	Patients with neuropathic pain	Canada	Regression analysis	Strengths: • Good choice of instruments • Appropriate statistical analyses
Thomas et al. (1998)	Prediction and assessment of severity of post-operative pain and of satisfaction with management	91	Patients undergoing THR, TKR or spinal nerve decompression surgery	Australia	Survey, regression analysis	Strengths: • Appropriate measures of pain Weaknesses: • The data for the three surgical groups (THR, TKR and spinal nerve decompression) were combined for the regression analyses despite differences in their demographics.

Author & Year of publication	Title of Paper	Number of participants	Setting	Country	Study type	Strengths and Weaknesses
Turner et al. (2002)	Catastrophizing is associated with pain intensity, psychological distress, and pain-related disability among individuals with chronic pain after spinal cord injury	174	Community dwelling adults with spinal cord injury and chronic pain	USA	Survey, regression analysis	Strengths: • Community dwelling sample • Good choice of instruments • Appropriate statistical analyses although the sample size may not be sufficient to support the number of variables entered into the regression analysis
Venkataramanan et al. (2006)	Expectations of recovery from revision knee replacement	184	Patients undergoing revision TKR	Canada	Survey, regression analysis	Strengths: • Good sample size • Appropriate statistical analysis Weaknesses: • Non-validated method of assessing patient expectations

Author & Year of publication	Title of Paper	Number of participants	Setting	Country	Study type	Strengths and Weaknesses
Vervoot et al. (2006)	Catastrophic Thinking About Pain is Independently Associated with Pain Severity, Disability and Somatic Complaints in School Children and Children with Chronic Pain	Study 1: 193 Study 2: 43	Study 1: sample of school of children Study 2: sample of children with chronic pain	Belgium	Correlation and regression analysis	Strengths: • Good choice of instruments Weaknesses: • Sample size in study 2 too small for regression analyses

Author & Year of publication	Title of Paper	Number of participants	Setting	Country	Study type	Strengths and Weaknesses
Vollrath et al. (1999)	Personality, Risky Health Behaviour, and Perceived Susceptibility to Health Risk	683	University students	Switzerland	Regression analysis	Strengths: • Good sample size although low response rate (39%) • Uses NEO-FFI • Appropriate statistical analyses Weaknesses: • Method of measuring health behaviours not validated • Sample may not be representative of general population
Whyte & Carroll (2004)	The relationship between catastrophizing and disability in amputees experiencing phantom pain	315	Patients with an amputated limb	UK	Survey, correlation & regression analysis	Strengths: • Good sample size • Uses CSQ • Appropriate statistical analyses

Author & Year of publication	Title of Paper	Number of participants	Setting	Country	Study type	Strengths and Weaknesses
Yeh et al. (2005)	Effects of multimedia with printed nursing guide in education on self-efficacy and functional activity in hospitalization in patients with hip replacement	66	Patients undergoing THR	China	Intervention study	Weaknesses: • Non-random sampling method • Unknown outcome measures.
Zavadak et al. (1995)	Variability in the Attainment of Functional Milestones during the Acute Care Admission after Total Joint Replacement	81: 33 THR, 45 TKR	Patients undergoing THR or TKR	USA	Bivariate analysis	Strengths: • Good descriptive study of time taken to achieve key physiotherapy milestones • Weaknesses: • Small sample sizes

Appendix 2

Ethics and Research Governance

North Sheffield Ethics Office
1st Floor Vickers Corridor

Direct Line: 0114 271 4894 or 271 4011
Fax: 0114 256 2469
Email: Sue.Rose@sth.nhs.uk

Northern General Hospital
Herries Road
Sheffield
S5 7AU

CMHN/AD/06/10/03

Enderby/NS2003 10 1783	**Please quote this number on all correspondence**

9th October 2003

Professor P Enderby
Professor of Community Rehabilitation
Institute of General Practice and Primary Care
Community Sciences Centre
Northern General Hospital

Dear Professor Enderby

Does personality affect short-term recovery from total hip replacement in mono-articular osteoarthritis?
NS2003 10 1783

The North Sheffield Research Ethics Committee reviewed your application on 6th October 2003. The documents reviewed were as follows:

- Application form signed by lead researcher on 19th September 2003.
- Information sheet version 1 dated 16th September 2003.
- Consent form version 1 dated 16th September 2003.
- Protocol version 1 dated 16th September 2003.
- C.V.s of investigators.

The Committee is prepared to offer a favourable opinion to this application subject to submission of the following information and modifications, which are detailed below:

1. In the patient information sheet:

   - In the paragraph "Why have I been chosen." This should be expanded, the 'other diseases' more clearly explained and the word 'hoped' should be deleted and replaced with 'expected'.

   - In the paragraph "What will happen to the results of the study?" the last four lines from the previous paragraph should be transferred to be under this heading.

   - Include a paragraph "What happens if something goes wrong." This should be the standard complaints paragraph as described in the Guidelines.

- On the last page "Thank you for taking part in this study" should be "Thank you for reading this information sheet" or "Thank you for your time."

2. Patients with post-operative complications should not be excluded from the study.

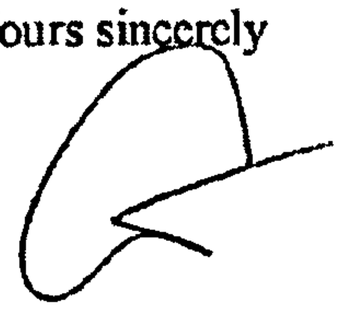
3 Indemnity details required from Sheffield Teaching Hospitals and The University of Sheffield.

4. Provide a copy of the questionnaire to be used.

The Committee has delegated authority to the Chair/Honorary Secretary to agree these modifications once they have been received. Subject to the Chair/Honorary Secretary's agreement a formal letter offering a favourable opinion will then be issued.

When submitting the response to the committee, please send revised documentation where appropriate underlining the changes you have made and giving revised version numbers and dates.

Yours sincerely



Dr C M H Newman
HONORARY SECRETARY - NORTH SHEFFIELD RESEARCH ETHICS COMMITTEE
Senior Lecturer in Cardiology/Honorary Consultant Physician

Cc Mr A Hamer, Ms C Gibson

UNIVERSITY OF SHEFFIELD

DEPARTMENT OF FINANCE

To	Professor Pamela Enderby	**Date**	13-Nov-03
Department	ScHARR		

Certificate of Insurances (non clinical trial)

Trial Number	NCT03/Z06
Department	ScHARR
Title of Trial	Does Personality Affect Short-Term Recovery from Total Hip Replacement in Mono-Articular Osteoarthritis
Name of Investigators	Professor Enderby, Mr. AJ Hamer, Dr. S. Mawson
Commencement Date	Jan-04

The University has in place insurance against liabilities for which it may be legally liable and this cover includes any such liabilities arising out of the above research project/study

.....

C.F. Jackson , Financial Accountant (Insurances)

Please Note

1. If not already provided please forward a copy of the Ethics Committee Approval as soon as possible

2. A record of the names of all participants, copies of signed Consent Forms and G.P.'s approvals should be retained by the Department.

NCT

NHS

North Sheffield Ethics Office
1st Floor Vickers Corridor

Direct Line: 0114 271 4894 or 271 4011
Fax: 0114 256 2469
Email: sue.rose@sth.nhs.uk

Northern General Hospital
Herries Road
Sheffield
S5 7AU

NORTH SHEFFIELD RESEARCH ETHICS COMMITTEE
RESPONSE FORM

DETAILS OF APPLICANT:

1. **Name and Address of Principal Researcher:** Professor Pamela Enderby, Institute of General Practice and Primary Care, Community Sciences Centre, Northern General Hospital, S5 7AU.

2. **Title of project:** Does personality affect short-term recovery from total hip replacement in mono-articular osteoarthritis?

3. **Name and address of Sponsor:** None declared.

DETAILS OF REC:

4. **Name and address of REC: North Sheffield Research Ethics Committee Northern General Hospital, Herries Road, SHEFFIELD S5 7AU**

5. **REC Reference Number: NS2003 10 1783**

Listed below is a complete record of the review undertaken by REC with the decisions made, dates of decisions and the requirements at each stage of the review:

6th October 2003

Study reviewed, approved subject to the following information/modifications.

1. In the patient information sheet:

   - In the paragraph "Why have I been chosen." This should be expanded, the 'other diseases' more clearly explained and the word 'hoped' should be deleted and replaced with 'expected'.

   - In the paragraph "What will happen to the results of the study?" the last four lines from the previous paragraph should be transferred to be under this heading.

   - Include a paragraph "What happens if something goes wrong." This should be the standard complaints paragraph as described in the Guidelines.

   - On the last page "Thank you for taking part in this study" should be "Thank you for reading this information sheet" or "Thank you for your time."

2. Patients with post operative complications should not be excluded from the study.

3 Indemnity details required from Sheffield Teaching Hospitals and The University of Sheffield.

4. Provide a copy of the questionnaire to be used.

17th February 2004

The following documents received:

- Application form – signatures complete.
- Patient information sheet version 2 dated 20th October 2003.
- Consent form version 2 dated 20th October 2003.
- Protocol version 2 dated 20th October 2003.
- Details of indemnity arrangements with the University of Sheffield dated 13th November 2003.
- Details of indemnity arrangements with Sheffield Teaching Hospitals dated 10th February 2004.
- Questionnaires, demographics, locus of control and coping strategies.
- NEO five factor inventory.

Changes to the application are as requested in letter dated 9th October 2003.

20th February 2004

Final approval given.

THE FINAL DOCUMENTS AND ARRANGEMENTS APPROVED BY THE REC

The following items have been approved by the North Sheffield Research Ethics Committee

- Application form – signatures complete.
- Patient information sheet version 2 dated 20th October 2003.
- Consent form version 2 dated 20th October 2003.
- Protocol version 2 dated 20th October 2003.
- Details of indemnity arrangements with the University of Sheffield dated 13th November 2003.
- Details of indemnity arrangements with Sheffield Teaching Hospitals dated 10th February 2004.
- Questionnaires, demographics, locus of control and coping strategies.
- NEO five factor inventory.
- C.V. Professor Enderby
- C.V. Clare Gibson

Methods of initial recruitment to study: as per protocol
Compensation arrangements for subjects: as per protocol
Payments to researcher: as per protocol
Provision of expenses for subjects: as per protocol

Date of approval: 20th February 2004

Signature of Administrator: A Dagnall Date: 20th February 2004

Name *(please print)*: A Dagnall – Admin Assistant

STH Research Department
Royal Hallamshire Hospital
305 Western Bank
Sheffield
S10 2TJ

Fax: 0114 271 1790
http://www.shef.ac.uk/sth-research
Intranet: See 'corporate, professional and patient services' - research department

Sheffield Teaching Hospitals NHS
NHS Trust

Ref: NS 03/10/1783

Date: 10 February 2004

Clare Gibson
Institute of General Practice and Primary Care – University of Sheffield
Community Sciences Centre
Northern General Hospital
Sheffield
S5 7AU

Dear Clare,

Re: Study NS 03/10/1783 – Does personality affect short-term recovery from total hip replacement in mono-articular osteoarthritis?

Thank you for notifying the Research Department about the above project.
The project has been reviewed for the purposes of indemnity and I can confirm Trust participation.

The indemnity shall not operate if Trust employees do not comply with the trial protocol, as approved by the Ethics Committee.

Yours sincerely,

R Eastell

Professor Richard Eastell
MD, FRCP (UK, Edinburgh, Ireland), FRCPath, FMedSci
Director of Research and Development for the Sheffield Teaching Hospitals Trust
Telephone +44 (0)114 271 2675
Fax +44 (0)114 2611790
e-mail r.eastell@sheffield.ac.uk

cc Sue Rose, NSREC

Prof R Eastell
Director of R&D
Tel: 0114 27 12675
r.eastell@sheffield.ac.uk

Dr B W Zinober
Research Manager
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brenda.zinober@sth.nhs.uk

Mrs T Ledger
Clinical Trails Co-ordinator
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Mr K McCormack
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Main Office Administration
Tel: 0114 27 13916/13740
sarah.copley@sth.nhs.uk
rachel.furniss@sth.nhs.uk

Chairman: David Stone OBE • Chief Executive: Andrew Cash OBE

Human Resources Department
Clock Tower Building
Northern General Hospital

Please as for: Paula McConnell
Telephone: (0114) 2715418
Fax: (0114) 2266996

18 February 2004

Mrs Clare Gibson
12 Northwood Place
Wadsley Park Village
Sheffield
S6 1RA

Dear Mrs Gibson

LETTER OF AUTHORITY

I am pleased to advise you that approval is hereby given for you to undertake duties in the Orthopaedic Surgery Department at the Northern General Hospital under the supervision of Professor P M Enderby.

The period of your attachment is from February 2004 to January 2006.

Authority is given only on the proviso that you make yourself familiar with the relevant policies and procedures of the Trust and specifically in relation to Health and Safety and Fire.

This letter of Authority is not a contract of employment and confers no employment rights or entitlements. It is subject to you maintaining the strictest confidentiality of information with which you may come into contact during the course of your time in the Trust, and maintaining acceptable standards of conduct.

The Trust the Sheffield Teaching Hospitals NHS Trust will not accept responsibility for damage to, or loss of, any personal property. You are recommended, therefore, to take out suitable insurance cover.

Finally, I should like to take this opportunity of welcoming you to the Northern General Hospital and hope that your attachment proves both interesting and rewarding.

If you agree to accept this Letter of Authority on the terms specified above, please sign the form of acceptance at the foot of this page and return it to the Human Resources Department, 2nd Floor Clock Tower Building, as soon as possible. The second signed copy of this letter is to be retained for your future reference.

Yours sincerely

Paula McConnell
HR Assistant
On Behalf of the Director of Human Resources

CC Jill Vandermeulen

I hereby accept the terms and conditions referred to in the aforementioned Letter of Authority

Signed ..... Date .....

file

North Sheffield Ethics Office
1st Floor Vickers Corridor

Direct Line: 0114 271 4894 or 271 4011
Fax: 0114 256 2469
Email: sue.rose@sth.nhs.uk

Northern General Hospital
Herries Road
Sheffield
S5 7AU

CMHN/AD/06/10/03

Enderby/NS2003 10 1783	**Please quote this number on all correspondence**

20th February 2004

Ms Clare Gibson
PhD Student
Community Sciences Centre
Institute of General Practice and Primary Care
Northern General Hospital

Dear Ms Gibson

Does personality affect a short- term recovery from total hip replacement in mono-articular osteoarthritis.
NS2003 10 1783

The Chair/Honorary Secretary of the North Sheffield Research Ethics Committee has considered the modifications submitted in response to the Committee's earlier review of your application on 6th October 2003 as set out in our letter dated 9th October 2003. The documents considered were as follows:

- Application form – signatures complete.
- Patient information sheet version 2 dated 20th October 2003.
- Consent form version 2 dated 20th October 2003.
- Protocol version 2 dated 20th October 2003.
- Details of indemnity arrangements with the University of Sheffield dated 13th November 2003.
- Details of indemnity arrangements with Sheffield Teaching Hospitals dated 10th February 2004.
- Questionnaires, demographics, locus of control and coping strategies.
- NEO five factor inventory.

The Chair/Honorary Secretary, acting under delegated authority, is satisfied that these accord with the decision of the Committee and has agreed that there is no objection on ethical grounds to the proposed study. I am, therefore, happy to give you the favourable opinion of the committee on the understanding that you will follow the conditions set out below.

Conditions

- You do not recruit any research subjects within a research site unless favourable opinion has been obtained from the relevant REC.
- You do not undertake this research in an NHS organisation until the relevant NHS management approval has been gained as set out in the Framework *for Research Governance in Health and Social Care.*
- You do not deviate from, or make changes to, the protocol without prior written approval of the REC, except where this is necessary to eliminate immediate hazards to research participants or when the change involves only logistical or administrative aspects of the research. In such cases the REC should be informed within seven days of the implementation of the change.
- You complete and return the standard progress report form to the REC one-year from the date on this letter and thereafter on an annual basis. This form should also be used to notify the REC when your research is completed and in this case should be sent to this REC within three months of completion.
- If you decided to terminate this research prematurely you send a report to this REC within 15 days, indicating the reason for the early termination.
- You advise the REC of any unusual or unexpected results that raise questions about the safety of the research.

A full record of the review undertaken by the REC is contained in the attached REC Response Form. The project must be started within three years of the date on which REC approval is given.

Yours sincerely

Dr C M H Newman
HONORARY SECRETARY - NORTH SHEFFIELD RESEARCH ETHICS COMMITTEE
Senior Lecturer in Cardiology/Honorary Consultant Physician

Cc Professor Enderby, Mr Hamer, STH R & D Department

Encs

North Sheffield Ethics Office
1st Floor Vickers Corridor

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Northern General Hospital
Herries Road
Sheffield
S5 7AU

NORTH SHEFFIELD RESEARCH ETHICS COMMITTEE

AMENDMENT RESPONSE FORM

Full Title of Study: Does personality affect short-term recovery from total hip replacement in osteoarthritis?

REC No. and version: NS2003 10 1783

Drug company protocol no. (if applicable):

Amendment Number and Date: 4th March 2004.

Amendment 1

Protocol version 3 dated 29th February 2004.
Patient information sheet version 3 dated 29th February 2004.

Amendments to information sheet and protocol as some patients will have surgery at Claremont or Thornbury instead of STH. Surgeons remain the same.

Inclusion criteria adapted, to include patients with total hip replacement as well as those involved in the stem design study.

The REC has reviewed your amendment in accordance with the procedure set out in the Information for Researchers Pack.

The REC has the following comments to make:

The investigator should check that current indemnity arrangements still apply.

Your amendment has been:

Approved subject to above comment.

Your amendment should be forwarded to the LRECs that have given local approval to your Study for::

Approval of local issues

Signed Chair/Honorary Secretary: _____

Print Name: _____Dr S R Brennan_____

Date of Report: _____5th March 2004_____

This form should be attached to the amendment approval request form sent by you to the REC. The two forms should be sent to the LRECs involved in the review of the study either for approval or information as indicated above.

Cc STH R & D Department

NORTH SHEFFIELD RESEARCH ETHICS COMMITTEE

AMENDMENT APPROVAL REQUEST FORM

To be completed by the principal researcher or sponsor company on behalf of the principal researcher and submitted to the appropriate REC.

Name and address of principal researcher:
Professor P.M. Enderby
Institute of General Practice and Primary Care,
University of Sheffield,
Community Sciences Centre,
Sheffield,
S5 7AU

Full Title of Study: Does Personality Affect Short-Term Recovery from Total Hip Replacement in Osteoarthritis?

REC no. and version number: NS2003 10 1783 version 3

Drug company protocol no. (if applicable): N/A

Amendment Number and Date: 4th March 2004

Information about the amendment:

1. Is the Amendment purely administrative?

No

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2. Has the Patient Information Sheet/Consent Form been changed as a result of the amendment?

Yes

If yes, please enclose a copy.

---

3. Has this amendment been submitted to the Medicines Control Agency?

NA

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4. Has the Medicines Control Agency approved the amendment?

NA

If no, please state the reason.

---

5. Summarise the issues contained in the amendment.
(Underline the amendment where appropriate)

Please see the attached documentation.

The research will now be conducted at the NGH, Claremont Hospital and Thornbury hospital as a change in orthopaedic provisions has meant that many NHS Total Hip Replacement patients will receive their surgery and initial post-operative rehabilitation at one of these three hospitals. As the time between pre-admission assessment clinic and admittance to one of the private hospitals is much shorter than to admittance to NGH, the recruitment and consent process has been modified to enable all data to be collected before the patients admission for surgery.

It has been necessary to widen the inclusion criteria to accept any patient undergoing Total Hip Replacement as a result of osteoarthritis. The number of exclusion criteria has been reduced as it is no longer a requirement for patients to be taking part in the stem design study. As a result, Harris and Oxford Hip Scores will now be collected independently of the stem design study.

---

6. Please give any other information you feel may be necessary:

Signature of Principal Researcher/
Sponsor Company on behalf of the principal researcher: ----------

Print Name: ----------

Date of Submission: ----------

When you have received approval from the REC this form should be attached to the amendment response form sent to you by the REC. The two forms should be sent to the LRECs involved in the review of the study either for approval or information as indicated on the REC approval form.

Thornbury Hospital

Thornbury Hospital
312 Fulwood Road
Sheffield S10 3BR

Tel 0114-266 1133
Fax 0114-268 6913
www.bmihealthcare.co.uk

Clare Gibson
Community Sciences Centre
Northern General Hospital
Herries Road
Sheffield
S5 7AU

22 March 2004

Dear Ms Gibson

Thank you for your recent letter.

I can confirm that as you only require access to the patients' physiotherapy notes, there is no requirement for the hospital's Medical Advisory Committee to grant approval to you. Perhaps you would like to contact Liz Yorke, my Physiotherapy Manager to discuss this further and make the necessary arrangements.

If I can be of any further assistance, please do not hesitate to contact me.

Yours sincerely

John Lofthouse
Executive Director

Cc
Liz Yorke
Physiotherapy Manager

The Claremont Hospital

401 SANDYGATE ROAD
SHEFFIELD S10 5UB
TEL: 0114 263 0330
FAX: 0114 230 9388

Ms Clare Gibson
The University of Sheffield
School of Health & Related Research
Community Sciences Centre
Northern General Hospital
Herries Road
Sheffield S5 7AU

21 April 2004

Dear Ms Gibson

Re Research Study – Affect of Personality on Recovery after Total Hip Replacement in Osteoarthritis

I am pleased to be able to inform you that following the advice I have received from the Claremont Hospital's Medical Advisory Committee I am happy to give you approval for your study insofar as it involves NHS patients whose treatment is being undertaken at the Claremont Hospital. This is contingent on the appropriate patient consent being obtained and the Study being conducted within the remit as approved by the North Sheffield Ethics Committee. The Hospital Matron, Ms Sonia Page, will be your contact at the Claremont Hospital and I hope all goes well with your work.

Kind regards.

Yours sincerely

TONY BARRETT
Hospital Director

Copies: Mr A Hamer
Ms S Page

The Claremont Hospital

401 SANDYGATE ROAD
SHEFFIELD S10 5UB
TEL: 0114 263 0330
FAX: 0114 230 9388

Ms C N Gibson
The University of Sheffield
School of Health & Related Research
Community Sciences Centre
Northern General Hospital
Herries Road
Sheffield S5 7AU

08 June 2004

Dear Ms Gibson

Re: Research Study – Affect of Personality on Recovery after Total Hip Replacement in Osteoarthritis

Thank you for your letter of 7 June 2004 seeking permission to attend the pre-operative clinic held at the Claremont Hospital on Tuesday mornings and for access to the appropriate patient's notes, which I am happy to extend to you in connection with the above Research Study.

Kind regards.

Yours sincerely

TONY BARRETT
Hospital Director

Copies: Sonia Page
Rachel Elliott

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NORTH SHEFFIELD RESEARCH ETHICS COMMITTEE

AMENDMENT APPROVAL REQUEST FORM

To be completed by the principal researcher or sponsor company on behalf of the principal researcher and submitted to the appropriate REC.

Name and address of principal researcher:
Professor P.M. Enderby
Institute of General Practice and Primary Care,
University of Sheffield,
Community Sciences Centre,
Sheffield,
S5 7AU

Full Title of Study: Does Personality Affect Short-Term Recovery from Total Hip Replacement in Osteoarthritis?

REC no. and version number: NS2003 10 1783 version 4

Drug company protocol no. (if applicable): N/A

Amendment Number and Date: 14th June 2004

Information about the amendment:

1. Is the Amendment purely administrative?

No

---

2. Has the Patient Information Sheet/Consent Form been changed as a result of the amendment?

Yes

If yes, please enclose a copy.

---

3. Has this amendment been submitted to the Medicines Control Agency?

NA

---

4. Has the Medicines Control Agency approved the amendment?

NA

If no, please state the reason.

---

5. Summarise the issues contained in the amendment.
(Underline the amendment where appropriate)

Please see the attached documentation.

It has been necessary to slightly modify the time point in which patients complete the battery of Questionnaires. This is necessary as the previous methods employed meant that patients' Questionnaires were not often being received back until after their surgery. If the patient had accidentally missed out any questionnaires, then there would be no opportunity to obtain answers for the missing questions and the patient would have to be excluded. In the revised protocol, patients will be asked to complete and return the battery of questionnaires as soon of possible after their attendance to pre-admission assessment clinic. They will be asked to complete the Coping Strategies Questionnaire a second time in the week preceding their surgery. This is necessary as the traits measured in this questionnaire are variable over time.

---

6. Please give any other information you feel may be necessary:

Signature of Principal Researcher/
Sponsor Company on behalf of the principal researcher: _____

Print Name: _____

Date of Submission: _____

When you have received approval from the REC this form should be attached to the amendment response form sent to you by the REC. The two forms should be sent to the LRECs involved in the review of the study either for approval or information as indicated on the REC approval form.

North Sheffield Ethics Office
1st Floor Vickers Corridor

Direct Line: 0114 271 4894 or 271 4011
Fax: 0114 256 2469
Email: sue.rose@sth.nhs.uk

Northern General Hospital
Herries Road
Sheffield
S5 7AU

7th July 2004

Professor P Enderby
Professor of Community Rehabilitation
Institute of General Practice and Primary Care
Community Sciences Centre
Northern General Hospital

Dear Professor Enderby

Full title of study: Does personality affect short term recovery from total hip replacement in mono-articular osteoarthritis?
REC reference number: NS2003 10 1783
Protocol number:

Amendment number: 2
Amendment date: 22nd June 2004 (date request signed)

The above amendment was reviewed by the a Sub-Committee of the Research Ethics Committee.

Ethical opinion

The members of the Committee present gave a favourable ethical opinion of the amendment on the basis described in the notice of amendment form and supporting documentation.

Approved documents

The documents reviewed and approved at the meeting were:

Protocol version 4 dated 14th June 2004.
Patient information sheet version 4 dated 15th June 2004.
Patient consent form dated 14th June 2004.

Membership of the Committee

The members of the Ethics Committee who were present at the meeting are listed on the attached sheet.

Management approval

Before implementing the amendment, you should check with the host organisation whether it affects their approval of the research.

Statement of compliance (from 1 May 2004)

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees (July 2001) and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

REC reference number: NS2004 10 1783	**Please quote this number on all correspondence**

Yours sincerely

Dr G P M Clark
CHAIRMAN – North Sheffield Research Ethics Committee
Consultant Anaesthetist

Enclosures *List of names and professions of members who were present at the meeting and those who submitted written comments*

Copy to: Clare Gibson

North Sheffield Ethics Office
1st Floor Vickers Corridor

Direct Line: 0114 271 4894 or 271 4011
Fax: 0114 256 2469
Email: sue.rose@sth.nhs.uk

Northern General Hospital
Herries Road
Sheffield
S5 7AU

GPMC/SR/06/10/03
Enderby/NS2003 10 1783
(Please quote reference on all correspondence)

26 August 2004

Professor P Enderby
Professor of Community Rehabilitation
Institute of General Practice and Primary Care
Community Sciences Centre
Northern General Hospital

Dear Professor Enderby

Full title of study: Does personality affect short term recovery from total hip replacement in mono-articular osteoarthritis?
REC reference number: NS2003 10 1783
Protocol number:

Amendment dated: 11 July 2004
Version Number 5

A Sub Committee of the Research Ethics Committee reviewed the above amendment.

Ethical opinion

The members of the Committee present gave a favourable ethical opinion of the amendment on the basis described in the notice of amendment form and supporting documentation.

Approved documents

The documents reviewed and approved at the meeting were:

- Amendment approval request form signed and dated 19 August 2004
- Summary of amendments – referenced in office as August 2004
- Protocol version 5 dated 11 July 2004
- Patient information sheet version 5 dated 11 July 2004
- Section A of questionnaire – dated august 2004 (Referenced in office)
- Knee Evaluation Sheet – version dated August 2004 (Referenced in office)
- Knee Society Score – version August 2004 (Referenced in office)
- Section D – version August 2004 (Referenced in office)
- Introductory letter – version August 2004 (Referenced in office)

Membership of the Committee

The members of the Ethics Committee who were present at the meeting are listed on the attached sheet.

Management approval

Before implementing the amendment, you should check with the host organisation whether it affects their approval of the research.

Statement of compliance (from 1 May 2004)

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees (July 2001) and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

REC reference number: *NS2003 10 1783* Please quote this number on all correspondence

Yours sincerely,

Sue Rose
Committee Administrator

Copy to: *R & D Consortium*

Enc *List of names and professions of members who were present at the meeting and those who submitted written comments*

North Sheffield Ethics Office
1st Floor Vickers Corridor

Direct Line: 0114 271 4894 or 271 4011
Fax: 0114 256 2469
Email: sue.rose@sth.nhs.uk

Northern General Hospital
Herries Road
Sheffield
S5 7AU

NORTH SHEFFIELD RESEARCH ETHICS COMMITTEE
MEMBER LIST

Written comments received (X) ***Project Reference: Enderby/NS2003 10 1783***

Dr C M H Newman X
(Senior Lecturer in Cardiology)

Mr B McCarthy
(Lay Member)

Dr G P M Clark X
(Consultant Anaesthetist)

Mr R Lonsdale
(Consultant Vascular Surgeon)

Dr J Shortland
(Consultant in Histopathology)

Dr L Geriardier
(Paediatric Expert)

Canon D E R Equeall
(Chaplain/Lay)
Medicine)

Mr T Gleeson
(Pharmacist)

Professor A Hutchinson
(Professor of Public Health

Dr M Wilkie
(Consultant Renal Physician)

Professor R Loynes
(Lay)

Mr D R May
(Lay)

Mr N Sykes
(Lay)

Ms F Purdy
(Nurse Specialist)

Professor P Nicolson
(Reader in Health Psychology)

Appointed deputies:

Mr S Palfreyman
(Staff Nurse)

Dr J Burr
(Lecturer in qualitative Research)

Rev J Fryer
(Chaplain/Lay)

North Sheffield Research Ethics Committee is organised and operates according to ICH GCP Guidelines. Only members who are independent of the investigator and the sponsor of the trial provide a review or opinion on a project/trial related matter.

Signed: SAbrey **Date: 26 August 2004**

(Designation) Administrator

Sheffield Teaching Hospitals NHS
NHS Trust

Lower Limb Arthroplasty Unit

www.sheffield.ac.uk/cavendish

Mr I Stockley MD FRCS
Consultant Orthopaedic Surgeon

Direct Line: (0114) 2714955
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Mr R M Kerry FRCS (Orth)
Consultant Orthopaedic Surgeon

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Mr A J Hamer MD FRCS (Orth)
Consultant Orthopaedic Surgeon

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Fax: (0114) 2266371

Mr S C Buckley FRCS (Tr&Orth)
Consultant Orthopaedic Surgeon

Direct Line: (0114) 2266335
Fax: (0114) 2266371

Mr M W Tomouk
Associate Specialist

Direct Line: (0114) 2266372
Fax: (0114) 2266371

Sister B Selvon
Arthroplasty Nurse Specialist

Help Line: (0114) 2266229

AJH.EDM

Orthopaedic Department
Northern General Hospital
Herries Road
Sheffield
S5 7AU

18 October 2004

Mr J Lofthouse
Chief Executive
Thornbury Hospital
312 Fulwood Road
Sheffield
S10 3BR

Dear John

RE: JOINT REPLACEMENT RESEARCH

I would be very grateful if I could have your permission for Sister Diane Swift to attend any Orthopaedic Pre-operative Assessment Clinics at Thornbury which patients will be seen prior to their surgery. This is particularly for the "Stem Design Study" which is currently ongoing at the Northern General Hospital. We have written to you previously about this study, and it has Ethics Committee approval. The purpose of this letter, is that currently Sister Swift only attends Mr Tomouk's Pre-operative Assessment Clinics. I would be grateful if she might have permission to attend Pre-operative Assessment Clinics for Messrs Stockley, Buckley, Kerry and Hamer.

I would also be grateful if the same permission could be granted to Mrs Clare Gibson, who is a PhD student currently undertaking a study looking at the psychological profile of patients undergoing joint replacement surgery. This study again has permission from the North Sheffield Research Ethics Committee, and I would be grateful for your permission for her attending the same Pre-operative Assessment Clinics.

I look forward to hearing from you.

Kind regards.

Yours sincerely

Mr A J Hamer MD FRCS (Orth)
Consultant Orthopaedic Surgeon

Copy to: Mrs C Gibson
Prof P Enderby
Sister D Swift
Sister D Swindell

Sheffield Teaching Hospitals NHS
NHS Trust

ower Limb Arthroplasty Unit

ww.sheffield.ac.uk/cavendish

Mr I Stockley MD FRCS
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Mr S C Buckley FRCS (Tr&Orth)
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Associate Specialist

Direct Line: (0114) 2266372
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Sister B Selvon
Arthroplasty Nurse Specialist

Help Line: (0114) 2266229

AJH.EDM

Orthopaedic Department
Northern General Hospital
Herries Road
Sheffield
S5 7AU

18 October 2004

Mr T Barrett
Chief Executive
Claremont Hospital
401 Sandygate Road
Sheffield
S10 5UB

Dear Tony

RE: JOINT REPLACEMENT RESEARCH

I would be very grateful if I could have your permission for Sister Diane Swift to attend any Orthopaedic Pre-operative Assessment Clinics at Claremont which patients will be seen prior to their surgery. This is particularly for the "Stem Design Study" which is currently ongoing at the Northern General Hospital. We have written to you previously about this study, and it has Ethics Committee approval. The purpose of this letter, is that currently Sister Swift only attends Mr Tomouk's Pre-operative Assessment Clinics. I would be grateful if she might have permission to attend Pre-operative Assessment Clinics for Messrs Stockley, Buckley, Kerry and Hamer.

I would also be grateful if the same permission could be granted to Mrs Clare Gibson, who is a PhD student currently undertaking a study looking at the psychological profile of patients undergoing joint replacement surgery. This study again has permission from the North Sheffield Research Ethics Committee, and I would be grateful for your permission for her attending the same Pre-operative Assessment Clinics.

I look forward to hearing from you.

Kind regards.

Yours sincerely

Mr A J Hamer MD FRCS (Orth)
Consultant Orthopaedic Surgeon

Copy to: Mrs C Gibson
Prof P Enderby
Sister D Swift
Sister D Swindell

The Claremont Hospital

401 SANDYGATE ROAD
SHEFFIELD S10 5UB
TEL: 0114 263 0330
FAX: 0114 230 9368

Mr A J Hamer
Consultant Orthopaedic Surgeon
Sheffield teaching Hospitals NHS Trust
Orthopaedic Department
Northern General Hospital
Herries Road
Sheffield S5 7AU

25 October 2004

Dear Andy

Re: Joint Replacement Research

Thank you for your letter of 18th October 2004 regarding Sister Diane Swift and Mrs Clare Gibson.

I confirm that I am happy for these two ladies to attend the Pre-operative Assessment Clinics for Messrs Stockley, Buckley, Kerry and Hamer in addition to those of Mr Tomouk.

Kind regards.

Yours sincerely

FILE PATIENT U2.
cc. DIANE + CLARE.

TONY BARRETT
Hospital Director

Copies: Sonia Page
Diane Martin

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YORKSHIRE + HUMBER

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THE HOSPITAL MANAGEMENT TRUST

Thornbury Hospital

Mr A J Hamer MD FRCS (Orth)
Consultant Orthopaedic Surgeon
Sheffield Teaching Hospitals NHS Trust
Orthopaedic Department
Northern General Hospital
Herries Road
Sheffield
S5 7AU

Thornbury Hospital
312 Fulwood Road
Sheffield S10 3BR

Tel 0114 266 1133
Fax 0114 268 6913
www.bmihealthcare.co.uk

26 October 2004

Dear Andy

Re: Joint Replacement Research

I am writing further to your letter dated 18 October 2004 to confirm authorisation for Sister Diane Swift and Mrs Clare Gibson to attend Pre-operative Assessment Clinics for Messrs Stockley, Buckley, Kerry and Hamer.

If I can be of any further assistance, please do not hesitate to contact me.

Kind regards.

Yours sincerely

John Lofthouse
Executive Director

— Fine Please with copies to Diane + Clare —

Cc
Janet Cooper
Director of Nursing

Appendix 3

Materials for Hip Study

The University Of Sheffield.

Community Sciences Centre
Northern General Hospital
Herries Road
Sheffield
S5 7AU

Tel: 0114 271 4861
Email: C.N.Gibson@Sheffield.ac.uk

Dear

I am PhD student at the University of Sheffield and am currently conducting research at the Northern General Hospital into how personality affects recovery after total hip replacement in osteoarthritis. This research will look at whether your personality (for example, whether you are more outgoing or more shy) is related to how you do in the physiotherapy that follows total hip replacement. If we found that they are related, then in the future (using different patients) it is hoped that we will be able to tailor the treatment to suit different personality types and increase everyone's chance of success.

I am writing to you to ask you to consider taking part in this study. Please take the time to read the attached patient information sheet carefully. I will contact you by telephone before you come to pre-admission assessment clinic to give you a chance to ask any questions you may have. If, however, you think of any questions in the meantime, please feel free to contact me on 0114 271 4861.

If you decide that you are willing to take part in the study, then at pre-admission assessment clinic, I will ask you to sign a consent form.

Thank you for taking the time to read this letter and patient information sheet.

Please don't hesitate to contact me if you have any queries.

Yours Sincerely

Clare Gibson

The University Of Sheffield.

Does personality affect success of rehabilitation following total hip replacement?

You are invited to take part in this research looking at how personality may affect the success of rehabilitation after total hip replacement. It is important that you understand why the research is being done and what it will involve before you make your decision as to whether or not you wish to take part. Therefore, please take the time to read this information sheet and feel free to ask us if there is anything that you do not understand or if you would like to be provided with more information.

Thank you for your time.

What is the purpose of the study?
The purpose of the study is to look for associations between personality and progress in physiotherapy following total hip replacement. If associations are found, it may then be possible in the future to develop more personalised rehabilitation programmes for different personality types and increase everyone's chance of success.

Why have I been chosen?
You have been chosen as a suitable candidate to take part as you are having a hip replacement as a result of osteoarthritis. Patients who have conditions which may affect rehabilitation, for example a previous stroke, or dementia, osteoarthritis in an upper limb joint which affects their ability to use crutches or a Zimmer frame, or severe osteoarthritis of another lower limb joint for which surgery is expected or planned for the future will be excluded from the study. It is expected that information will be collected from 100 patients for the study.

Do I have to take part?
It is entirely up to you whether or not you decide to take part in this study -your treatment will not be affected by your choice. If you decide you would like to take part, you will be given this information sheet to keep and will be asked to sign a consent form. If you decide to take part, you are still free to withdraw from the study at any time without giving reason. Choosing to withdraw from the study will not affect your standard of care.

What will happen to me if I take part in the study?
After giving written consent that you are willing to take part in the study (at pre-admission assessment clinic), a couple of small tests will be done to find out how well your hip is moving. After this, you will be given a pack

containing questionnaires to take home and fill out in your own time. The questionnaires will assess what type of personality you have, for example, whether you are outgoing or more quiet. In addition, some other simple questions will be asked to gain information on your age, gender and ethnicity etc. which may affect the success of the rehabilitation. You will be provided with a booklet of questionnaires in a large (A4) prepaid envelope. We request that you complete these as soon as possible and return to the university. If there are any questions that you do not understand or are not comfortable with, you can contact the researcher by phone for advice. Additionally, you have also been provided with a second copy of the coping strategies questionnaire (CSQ) and a smaller A5 envelope. Please do not complete this until instructed to do so by the researcher. The researcher will phone you to ask you to fill out the questionnaire at the appropriate time. The reason that we ask you to complete this questionnaire twice, is that it is possible that the traits being assessed with this questionnaire are variable over time. If this is the case, then it is important that all patients fill out this questionnaire the same amount of time before their surgery. After you have had your operation, routine data will be collected to assess how well you are doing in the rehabilitation process. The researcher will approach you again at your 3-month orthopaedic clinic appointment to ask you to repeat two of the questionnaires and to repeat a couple of the measurements which were recorded at the pre-admission assessment clinic. Your treatment will not be affected in any way by agreeing to take part in the study.

What are the possible disadvantages and risks of taking part?
As your treatment will not be affected in any way, there are no risks or disadvantages to you taking part in this study but it will take a little of your time (approximately 1 hour initially and 20 minutes at your 3 month follow-up appointment).

What are the possible benefits of taking part?
There will be no benefits to you taking part in the study. However, the information gained from this study may benefit people who in the future have a total hip replacement.

What happens if something goes wrong?
If you are harmed by taking part in this research project, there are no special compensation arrangements. If you are harmed due to someone's negligence, then you may have grounds for a legal action but you may have to pay for it. Regardless of this, if you wish to complain, or have any concerns about any aspect of the way you have been approached or treated during the course of this study, the normal National Health Service complaints mechanisms should be available to you.

Will my taking part in the study be kept confidential?
All information collected about you during the course of the research will be kept strictly confidential. Any information about you which leaves the hospital will have your name and address removed so that you cannot be recognised from it.

What will happen to the results of the research study?

The results of this study will contribute to the thesis of Clare Gibson. All information given in here will be anonymous i.e. you will not be identifiable from the information given. The data will be published in order to assist others carrying out research in a similar area. The data will be used in the second phase of the study (using different patients) to try and find ways of improving the rehabilitation process for different personality types.

Who is organizing and funding the research?
This study has been organized by:

Clare N Gibson	PhD Student, School of Health and Related Research, University of Sheffield
Professor P M Enderby	Professor of Community Rehabilitation, University of Sheffield
Mr A J Hamer	Consultant Orthopaedic Surgeon, Sheffield Teaching Hospitals
Dr S Mawson	Reader in Physiotherapy, Sheffield Hallam University

Who has reviewed the study?
This study has been reviewed by the North Sheffield Local Research Ethics Committee.

Who to contact for further information

Clare Gibson
University of Sheffield,
Community Sciences Building,
Northern General Hospital
Sheffield
S5 7AU
Tel: 0114 271 4861

Thank you for your time.

Phone Script for Hip Study

Hello, Could I speak to ..... please?

My name is Clare Gibson, I am a researcher at the university of Sheffield. I recently wrote to you about a study looking at how personality affects recovery after hip replacement which shall be taking place at the hospital.

Have you had chance to read the information sheet that came with the letter?

I was phoning today to give you a chance to ask any questions you might have, and find out whether you might be interested in taking part in the study.

So, is there anything you would like to ask? .....

Do you think you might be interested in taking part in the study? You don't have to decide yet, but you need to let me know at your pre-admission assessment clinic.

I will come down to clinic to find out whether you would like to take part in the study. It is entirely up to you whether or not you do. If you decide you are willing to be in the study, then I will ask you a couple of medical questions to check your eligibility, and then assuming everything is OK will ask you to sign a consent form.

The surgeon will then come and take a couple of measurements for me to find out how well your hip is moving. After this I will give you the questionnaires to take home to fill out.

The University Of Sheffield.

Patient Identification Number for this trial:

CONSENT FORM

Title of Project: **Does personality affect success of rehabilitation following total hip replacement?**

Name of Researcher: Mrs C.N Gibson, Professor P.M Enderby, Mr A.J Hamer, Dr S Mawson

Please initial box

1. I confirm that I have read and understand the information sheet dated 14th June 2004 (version 4) for the above study and have had the opportunity to ask questions. ☐

2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason, without my medical care or legal rights being affected. ☐

3. I understand that sections of any of my medical notes may be looked at by responsible individuals where it is relevant to my taking part in research. I give permission for these individuals to have access to my records. ☐

4. I agree to take part in the above study. ☐

Name of Patient	Date	Signature
Name of Person taking consent (if different from researcher)	Date	Signature
Researcher	Date	Signature

1 for patient; 1 for researcher; 1 to be kept with hospital notes

Hip Evaluation Sheet

Please complete this form for the affected hip only.

Patient Hospital Number:

Range of Motion (degrees)

Fixed flexion	
Flexion to	
Abduction	
External rotation in extension	
Internal rotation in extension	
Adduction	

Deformity (degrees)

Fixed Adduction	
Fixed External Rotation	

Day	0	1	2	3	4	5	6	7	8	9	10
Date											

Physiotherapy record sheet

Study ID	
Name	
Date of Surgery	
Days taken to independently bed transfer	
Days taken to independently chair transfer	
Days taken to independently toilet transfer	
Days taken to mobilise with frame	
Days taken to mobilise with crutches	
Number of physiotherapy sessions	
Day deemed ready for discharge	
Length of stay	

Notes:

Medical Information Sheet

Patient Hospital Number:

Co-morbidities

Significant co-morbidities:

Referral to Dr Austin ☐

Referral to anaesthetist ☐

Notes:

Post-operative complications:

None recorded ☐

Infection ☐

DVT ☐

PE ☐

MI ☐

Stroke ☐

Other ☐

Notes:

Joint Replacement History Sheet

Patient Hospital Number:

Joint being replaced in study:

Left hip ☐

Right hip ☐

Previous joint replacements:

Left hip ☐

Right hip ☐

Left hip revision ☐

Right hip revision ☐

Left knee ☐

Right knee ☐

Left knee revision ☐

Right knee revision ☐

Total number of previous joint replacements _____

The University Of Sheffield.

Community Sciences Centre
Northern General Hospital
Herries Road
Sheffield
S5 7AU

Tel: 0114 271 4861
Email: C.N.Gibson@Sheffield.ac.uk

Dear

Re: Study – Does personality affect success of rehabilitation following total hip replacement?

Thank you for your involvement in the above study so far. Your help is greatly appreciated.

Please could you complete the attached questionnaires and bring them with you to your orthopaedic appointment on..... At this appointment, as well as seeing the doctor/nurse, you will be approached by Barbara Selvon who is an arthroplasty specialist nurse. She will collect the completed questionnaires off you and pass them on to me. In addition, she will repeat a couple of the measurements which were recorded at pre-admission assessment clinic which assesses how well your hip is moving. If you have any questions about this, please do not hesitate to contact me on 0114 271 4861.

After this, your involvement in this study will be complete. I would like to thank you once again for your involvement in the study and wish you all the best for your future endeavours.

Yours Sincerely

Clare Gibson

3-month Hip Evaluation Sheet

Please complete this form for the affected hip only.

Patient Hospital Number:

Range of Motion (degrees)

Fixed flexion	
Flexion to	
Abduction	
External rotation in extension	
Internal rotation in extension	
Adduction	

Deformity (degrees)

Fixed Adduction	
Fixed External Rotation	

Appendix 4

Materials for Knee Study

The University Of Sheffield.

Community Sciences Centre
Northern General Hospital
Herries Road
Sheffield
S5 7AU

Tel: 0114 271 4861
Email: C.N.Gibson@Sheffield.ac.uk

Dear

I am PhD student at the University of Sheffield and am currently conducting research at the Northern General Hospital into how personality affects recovery after total knee replacement in osteoarthritis. This research will look at whether your personality (for example, whether you are more outgoing or more shy) is related to how you do in the physiotherapy that follows total knee replacement. If we found that they are related, then in the future (using different patients) it is hoped that we will be able to tailor the treatment to suit different personality types and increase everyone's chance of success.

I am writing to you to ask you to consider taking part in this study. Please take the time to read the attached patient information sheet carefully. I will contact you by telephone before you come to pre-admission assessment clinic to give you a chance to ask any questions you may have. If, however, you think of any questions in the meantime, please feel free to contact me on 0114 271 4861.

If you decide that you are willing to take part in the study, then at pre-admission assessment clinic, I will ask you to sign a consent form.

Thank you for taking the time to read this letter and patient information sheet.

Please don't hesitate to contact me if you have any queries.

Yours Sincerely

The University Of Sheffield.

Does personality affect success of rehabilitation following total knee replacement?

You are invited to take part in this research looking at how personality may affect the success of rehabilitation after total knee replacement. It is important that you understand why the research is being done and what it will involve before you make your decision as to whether or not you wish to take part. Therefore, please take the time to read this information sheet and feel free to ask us if there is anything that you do not understand or if you would like to be provided with more information.

Thank you for your time.

What is the purpose of the study?
The purpose of the study is to look for associations between personality and progress in physiotherapy following total knee replacement. If associations are found, it may then be possible in the future to develop more personalised rehabilitation programmes for different personality types and increase everyone's chance of success.

Why have I been chosen?
You have been chosen as a suitable candidate to take part as you are having a knee replacement as a result of osteoarthritis. Patients who have conditions which may affect rehabilitation, for example a previous stroke, or dementia, osteoarthritis in an upper limb joint which affects their ability to use crutches or a Zimmer frame, or severe osteoarthritis of another lower limb joint for which surgery is expected or planned for the future will be excluded from the study. It is expected that information will be collected from 100 patients for the study.

Do I have to take part?
It is entirely up to you whether or not you decide to take part in this study -your treatment will not be affected by your choice. If you decide you would like to take part, you will be given this information sheet to keep and will be asked to sign a consent form. If you decide to take part, you are still free to withdraw from the study at any time without giving reason. Choosing to withdraw from the study will not affect your standard of care.

What will happen to me if I take part in the study?

- If you decide you are willing to take part in the study, then you will be asked to sign a consent form at pre-admission assessment clinic.
- The surgeon will perform a couple of small tests on your knee to find out how well it is moving.

- The researcher will provide you with a pack of questionnaires to take home and complete in your own time. The questionnaires will assess what type of personality you have, for example, whether you are outgoing or more quiet. In addition, some other simple questions will be asked to gain information on your age, gender and ethnicity etc. which may affect the success of the rehabilitation.
- The pack contains two envelopes, one labelled A and one labelled B.
- **We request that you complete the questionnaires contained in envelope A as soon as possible and return to the university.** If there are any questions that you do not understand or are not comfortable with, you can contact the researcher by phone for advice.
- Envelope B contains a second copy of one of these questionnaires. **Please do not complete this until instructed to do so by the researcher.** The researcher will phone you to ask you to fill out the questionnaire at the appropriate time. The reason that we ask you to complete this questionnaire twice, is that it is possible that the traits being assessed with this questionnaire are variable over time. If this is the case, then it is important that all patients fill out this questionnaire the same amount of time before their surgery.
- After you have had your operation, the researcher will access your physiotherapy notes to assess how well you are doing in the rehabilitation process.
- The researcher will approach you again at your 3-month orthopaedic clinic appointment to ask you to repeat two of the questionnaires and to repeat a couple of the measurements which were recorded at the pre-admission assessment clinic.
- The researcher will approach you again at your 12-month orthopaedic clinic appointment to ask you to repeat two of the questionnaires and to repeat a couple of the measurements which were recorded at the pre-admission assessment clinic.
- Your treatment will not be affected in any way by agreeing to take part in the study.

What are the possible disadvantages and risks of taking part?
As your treatment will not be affected in any way, there are no risks or disadvantages to you taking part in this study but it will take a little of your time (approximately 1 hour initially, 20 minutes at your 3 month follow-up appointment, and 20 minutes at your 12-month follow-up appointment).

What are the possible benefits of taking part?
There will be no benefits to you taking part in the study. However, the information gained from this study may benefit people who in the future have a total knee replacement.

What happens if something goes wrong?
If you are harmed by taking part in this research project, there are no special compensation arrangements. If you are harmed due to someone's negligence, then you may have grounds for a legal action but you may have to pay for it. Regardless of this, if you wish to complain, or have any concerns about any aspect of the way you have been approached or treated during the course of this study, the normal National Health Service complaints mechanisms should be available to you.

Will my taking part in the study be kept confidential?
All information collected about you during the course of the research will be kept strictly confidential. Any information about you which leaves the hospital will have your name and address removed so that you cannot be recognised from it.

What will happen to the results of the research study?
The results of this study will contribute to the thesis of Clare Gibson. All information given in here will be anonymous i.e. you will not be identifiable from the information given. The data will be published in order to assist others carrying out research in a similar area. The data will be used in the second phase of the study (using different patients) to try and find ways of improving the rehabilitation process for different personality types.

Who is organizing and funding the research?
This study has been organized by:

Clare N Gibson	PhD Student, School of Health and Related Research, University of Sheffield
Professor P M Enderby	Professor of Community Rehabilitation, University of Sheffield
Mr A J Hamer	Consultant Orthopaedic Surgeon, Sheffield Teaching Hospitals
Dr S Mawson	Reader in Physiotherapy, Sheffield Hallam University

Who has reviewed the study?
This study has been reviewed by the North Sheffield Local Research Ethics Committee.

Who to contact for further information

Clare Gibson
University of Sheffield,
Community Sciences Building,
Northern General Hospital
Sheffield
S5 7AU
Tel: 0114 271 4861

Thank you for your time.

Phone Script for Knee Study

Hello, Could I speak to ..... please?

My name is Clare Gibson, I am a researcher at the university of Sheffield. I recently wrote to you about a study looking at how personality affects recovery after knee replacement which shall be taking place at the hospital.

Have you had chance to read the information sheet that came with the letter?

I was phoning today to give you a chance to ask any questions you might have, and find out whether you might be interested in taking part in the study.

So, is there anything you would like to ask? .....

Do you think you might be interested in taking part in the study? You don't have to decide yet, but you need to let me know at your pre-admission assessment clinic.

I will come down to clinic to find out whether you would like to take part in the study. It is entirely up to you whether or not you do. If you decide you are willing to be in the study, then I will ask you a couple of medical questions to check your eligibility, and then assuming everything is OK will ask you to sign a consent form.

The surgeon will then come and take a couple of measurements for me to find out how well your knee is moving. After this I will give you the questionnaires to take home to fill out.

The University Of Sheffield.

Patient Identification Number for this trial:

CONSENT FORM

Title of Project: **Does personality affect success of rehabilitation following total knee replacement?**

Name of Researcher: Mrs C.N Gibson, Professor P.M Enderby, Mr A.J Hamer, Dr S Mawson

Please initial box

1. I confirm that I have read and understand the information sheet dated 11th July 2004 (version 5) for the above study and have had the opportunity to ask questions. ☐

2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason, without my medical care or legal rights being affected. ☐

3. I understand that sections of any of my medical notes may be looked at by responsible individuals where it is relevant to my taking part in research. I give permission for these individuals to have access to my records. ☐

4. I agree to take part in the above study. ☐

Name of Patient	Date	Signature
Name of Person taking consent (if different from researcher)	Date	Signature
Researcher	Date	Signature

1 for patient; 1 for researcher; 1 to be kept with hospital notes

Knee Evaluation Sheet

Please complete this form for the affected knee only.

Patient Hospital Number:

Flexion contracture (bony) Degrees

Flexion range Degrees

Extension lag Degrees

Medial/Lateral Stability (please tick one box only)

0-5mm ☐

5-10mm ☐

>10mm ☐

Anterior/Posterior Instability (please tick one box only)

0-5mm ☐

5-10mm ☐

>10mm ☐

Alignment

Varus Degrees

Valgus Degrees

Day	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Date																					

Physiotherapy record sheet - knee

Study ID	
Name	
Date of Surgery	
Days taken to SLR	
Date taken to 90° bend	
Days taken to independently bed transfer	
Days taken to independently chair transfer	
Days taken to independently toilet transfer	
Days taken to mobilise with frame	
Days taken to mobilise with crutches	
Number of physiotherapy sessions	
Day deemed ready for discharge	
Length of stay	

Notes:

Medical Information Sheet

Patient Hospital Number:

Co-morbidities

Significant co-morbidities:

Referral to Dr Austin ☐

Referral to anaesthetist ☐

Notes:

Post-operative complications:

None recorded ☐

Infection ☐

DVT ☐

PE ☐

MI ☐

Stroke ☐

Other ☐

Notes:

Joint Replacement History Sheet

Patient Hospital Number:

Joint being replaced in study:

Left knee ☐

Right knee ☐

Previous joint replacements:

Left hip ☐

Right hip ☐

Left hip revision ☐

Right hip revision ☐

Left knee ☐

Right knee ☐

Left knee revision ☐

Right knee revision ☐

Total number of previous joint replacements _____

The University Of Sheffield.

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Northern General Hospital
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S5 7AU

Tel: 0114 271 4861
Email: C.N.Gibson@Sheffield.ac.uk

Dear

Re: Study – Does personality affect success of rehabilitation following total knee replacement?

Thank you for your involvement in the above study so far. Your help is greatly appreciated.

Please could you complete the attached questionnaires around the date of ..... (3-months from your surgery) and return in the envelope provided. When you attend for your hospital appointment on ..... you will be approached by Barbara Selvon who is an arthroplasty specialist nurse. She will repeat a couple of the measurements which were recorded at pre-admission assessment clinic which assesses how well your knee is moving. If you have any questions about this, please do not hesitate to contact me on 0114 271 4861.

After this, I will contact you again to ask you to repeat these questionnaires shortly before your 12-month follow-up.

Thank you once again for your involvement in the study.

Yours Sincerely

Clare Gibson

3-month Knee Evaluation Sheet

Please complete this form for the affected knee only.

Patient Hospital Number:

Flexion contracture (bony) Degrees

Flexion range Degrees

Extension lag Degrees

Medial/Lateral Stability (please tick one box only)

0-5mm ☐

5-10mm ☐

>10mm ☐

Anterior/Posterior Instability (please tick one box only)

0-5mm ☐

5-10mm ☐

>10mm ☐

Alignment

Varus Degrees

Valgus Degrees

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Dear

Re: Study – Does personality affect success of rehabilitation following total knee replacement?

Thank you for your involvement in the above study so far. Your help is greatly appreciated.

Please could you complete the attached questionnaires and return in the envelope provide. If you have any questions about this, please do not hesitate to contact me on 0114 271 4861.

After this, your involvement in this study will be complete. I would like to thank you once again for your involvement in the study and wish you all the best for your future endeavours.

Yours Sincerely

Clare Gibson

Appendix 5

Questionnaires

Section A

This section has been designed to find out some general information about you. Please answer **ALL** the questions below. For each question, only tick one box unless instructed otherwise.

Q1 Are you:

- Male ☐
- Female ☐

Q2 Age on day of operation .....

Q3 Please indicate which best describes your ethnic origin:

- White ☐
- Mixed ☐
- Asian or Asian British ☐
- Black or Black British ☐
- Chinese or ethnic group ☐

Q4 How many people (excluding yourself) currently live in your household?

.....

Q5 Please now provide some information about your education:

How old were you when you left school?.....

Please tick if any of these apply to you

- Educated to 'A' level ☐
- Educated to degree level ☐
- Educated to post-graduate level ☐
- Other further training not listed above ☐

Q6 Please now provide some information about your employment:

I am	Employed	☐
	Unemployed	☐
	Retired	☐

Please state your occupation or profession. If you are now retired, please state your previous occupation or profession.

.....

Thank you

Please now turn to section B of the questionnaire booklet.

Section B

This section has been designed to find out your views on who you think is responsible for your recovery following your surgery. This is a measure of your personal beliefs and therefore there are no right or wrong answers. Please read each of the statements carefully and then tick the appropriate box to indicate the extent to which you agree or disagree with the statement. Please answer **ALL** the questions and tick only one answer per question.

		Strongly disagree	Moderately disagree	Slightly disagree	Slightly agree	Moderately agree	Strongly agree
Q1	If after my operation, my hip feels worse, it is my own behaviour which will determine how soon I will feel better again.	☐	☐	☐	☐	☐	☐
Q2	What will be will be.	☐	☐	☐	☐	☐	☐
Q3	If after my operation, I see my doctor regularly, I will be less likely to have problems with my hip.	☐	☐	☐	☐	☐	☐
Q4	Most things that affect my recovery will happen to me by chance.	☐	☐	☐	☐	☐	☐
Q5	Whenever my hip feels bad, I should consult a medically trained professional.	☐	☐	☐	☐	☐	☐
Q6	I am directly responsible for my hip getting better or worse.	☐	☐	☐	☐	☐	☐
Q7	Other people play a big role in whether my hip will improve, stay the same, or get worse.	☐	☐	☐	☐	☐	☐
Q8	After my operation, whatever goes right or wrong with my hip is my own doing/fault.	☐	☐	☐	☐	☐	☐
Q9	Luck will play a big part in determining how my hip improves.	☐	☐	☐	☐	☐	☐

		Strongly agree	Moderately agree	Slightly agree	Slightly disagree	Moderately disagree	Strongly disagree
Q10	In order for my hip to improve, it is up to other people to see that the right things happen.	☐	☐	☐	☐	☐	☐
Q11	Whatever improvement occurs with my hip is largely a matter of good fortune.	☐	☐	☐	☐	☐	☐
Q12	After my operation, the main thing which will affect my hip is what I do myself.	☐	☐	☐	☐	☐	☐
Q13	I deserve the credit when my hip improves and the blame when it gets worse.	☐	☐	☐	☐	☐	☐
Q14	Following doctor's order to the letter is the best way to see my hip improve.	☐	☐	☐	☐	☐	☐
Q15	If my hip does not improve, it's a matter of fate.	☐	☐	☐	☐	☐	☐
Q16	If I am lucky, my hip will get better.	☐	☐	☐	☐	☐	☐
Q17	If following surgery, my hip does not show any improvement, it is because I have not been taking proper care of myself.	☐	☐	☐	☐	☐	☐
Q18	The help I receive from other people will determine how soon my hip improves.	☐	☐	☐	☐	☐	☐

Thank you

Please now turn to section C of the questionnaire booklet.

Section D

Please answer the following questions about problems which you have with your hip. Please read each statement carefully and then tick the appropriate box. Please remember that there are no right or wrong answers. Tick only one box for each question. Please answer every question.

1. During the past 4 weeks: How would you describe the pain you usually have from your hip?

A None ☐

B Very mild ☐

C Mild ☐

D Moderate ☐

E Severe ☐

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2. During the past 4 weeks: Have you had any trouble with washing and drying yourself (all over) because of your hip?

A No trouble at all ☐

B Very little trouble ☐

C Moderate trouble ☐

D Extreme difficulty ☐

E Impossible to do ☐

---

3. During the past 4 weeks: Have you had any trouble getting in and out of a car or using public transport because of your hip?

A No trouble at all ☐

B Very little trouble ☐

C Moderate trouble ☐

D Extreme difficulty ☐

E Impossible to do ☐

---

4. During the past 4 weeks: Have you been able to put on a pair of socks, stockings, or tights?

A Yes, easily ☐

B With a little difficulty ☐

C With Moderate difficulty ☐

D With extreme difficulty ☐

E No, impossible ☐

---

5. During the past 4 weeks: Could you do the household shopping on your own?

A Yes, easily ☐

B With a little difficulty ☐

C With moderate difficulty ☐

D With extreme difficulty ☐

E No, impossible ☐

---

6. During the past 4 weeks: For how long have you been able to walk (with or without a stick) before pain from your hip becomes severe?

A No pain/more than 30 minutes ☐

B 16 to 30 minutes ☐

C 5 to 15 minutes ☐

D Around the house only ☐

E Not at all – pain severe on walking ☐

---

7. During the past 4 weeks: Have you been able to climb a flight of stairs?

A Yes, easily ☐

B With a little difficulty ☐

C With moderate difficulty ☐

D With extreme difficulty ☐

E No, impossible ☐

---

8. During the past 4 weeks: After a meal (sat at a table), how painful has it been for you to stand up from a chair because of your hip?

A Not at all painful ☐

B Slightly painful ☐

C Moderately painful ☐

D Very painful ☐

E Unbearable ☐

---

9. During the past 4 weeks: Have you been limping when walking because of your hip?

A Rarely/Never ☐

B Sometimes/ or just at first ☐

C Often, not just at first ☐

D Most of the time ☐

E All of the time ☐

---

10. During the past 4 weeks: Have you had any sudden, severe pain – shooting, stabbing or spasms from the affected hip?

A No days ☐

B 1 or 2 days ☐

C Some days ☐

D Most days ☐

E Every day ☐

---

11. During the past 4 weeks: How much pain from your hip interfered with your usual work (including housework)?

A Not at all ☐

B A little bit ☐

C Moderately ☐

D Greatly ☐

E Totally ☐

---

12. During the past 4 weeks: Have you been troubled by pain from your hip bed at night?

A No nights ☐

B Only 1 or 2 nights ☐

C Some nights ☐

D Most nights ☐

E Every night ☐

Section E

Please answer the following questions about your hip and how it affects your ability to carry out tasks. Please read each statement carefully and then tick the appropriate box. Please remember that there are no right or wrong answers. Tick only one box for each question. Please answer every question.

1. Please describe any pain in your hip:

A No pain ☐

B Slight pain or occasional pain ☐

C Mild, no effect on ordinary activity, pain after unusual activity, uses aspirin or similar medication ☐

D Moderate pain that requires painkillers stronger than aspirin/similar medications. I'm active but have to make modifications and/or give up some activities because of pain ☐

E Marked or severe pain that limits activity and requires painkillers frequently. ☐

F Totally disabled – wheelchair or bed ridden ☐

---

2. Amount and type of support used:

A None ☐

B Walking stick for long walks ☐

C Walking stick all the time ☐

D 2 walking sticks ☐

E 1 crutch ☐

F 2 crutches or zimmer frame ☐

G Unable to walk ☐

---

3. Limp. This should be judged at the end of a long walk using the *type* of support chosen in question 2.

A None ☐

B Slight ☐

C Moderate ☐

D Severe ☐

---

4. Distance that you can walk. This should be used with the aid of a support if you use one.

A Unlimited ☐

B ½ - ¾ mile ☐

C 150-550 yards ☐

D In the house only ☐

E Unable to walk ☐

---

5. Climbing stairs:

A Normally ☐

B Need a banister or cane or crutch ☐

C Must put both feet on each step/severe trouble climbing stairs ☐

D Unable to climb stairs ☐

---

6. Shoes and socks

A Can put on socks and tie a shoe easily ☐

B Can put on socks and tie a shoe with difficulty ☐

C Cannot put on socks and shoes ☐

7. Sitting:

A Comfortable in any chair ☐

B Comfortable only in high chair, or can sit comfortably for only ½ hour. ☐

C Cannot sit for ½ hour because of pain ☐

Section A

This section has been designed to find out some general information about you. Please answer **ALL** the questions below. For each question, only tick one box unless instructed otherwise.

Q1 Are you:

- Male ☐
- Female ☐

Q2 Age on day of operation .....

Q3 Please indicate which best describes your ethnic origin:

- White ☐
- Mixed ☐
- Asian or Asian British ☐
- Black or Black British ☐
- Chinese or ethnic group ☐

Q4 How many people (excluding yourself) currently live in your household?

.....

Q5 Briefly state who will be around to help you when you return back home following your operation (e.g. family, friends etc). If you have been told that you will receive Home Help please state this here.

.....
.....
.....
.....

Q6 Please now provide some information about your education:

How old were you when you left school?.....

Please tick if any of these apply to you

- Educated to 'A' level ☐
- Educated to degree level ☐
- Educated to post-graduate level ☐
- Other further training not listed above ☐

Q7 Please now provide some information about your employment:

I am
- Employed ☐
- Unemployed ☐
- Retired ☐

Please state your occupation or profession. If you are now retired, please state your previous occupation or profession.

.....

Thank you

Please now turn to section B of the questionnaire booklet.

Section B

This section has been designed to find out your views on who you think is responsible for your recovery following your surgery. This is a measure of your personal beliefs and therefore there are no right or wrong answers. Please read each of the statements carefully and then tick the appropriate box to indicate the extent to which you agree or disagree with the statement. Please answer **ALL** the questions and tick only one answer per question.

		Strongly disagree	Moderately disagree	Slightly disagree	Slightly agree	Moderately agree	Strongly agree
Q1	If after my operation, my knee feels worse, it is my own behaviour which will determine how soon I will feel better again.	☐	☐	☐	☐	☐	☐
Q2	What will be will be.	☐	☐	☐	☐	☐	☐
Q3	If after my operation, I see my doctor regularly, I will be less likely to have problems with my knee.	☐	☐	☐	☐	☐	☐
Q4	Most things that affect my recovery will happen to me by chance.	☐	☐	☐	☐	☐	☐
Q5	Whenever my knee feels bad, I should consult a medically trained professional.	☐	☐	☐	☐	☐	☐
Q6	I am directly responsible for my knee getting better or worse.	☐	☐	☐	☐	☐	☐
Q7	Other people play a big role in whether my knee will improve, stay the same, or get worse.	☐	☐	☐	☐	☐	☐
Q8	After my operation, whatever goes right or wrong with my knee is my own doing/fault.	☐	☐	☐	☐	☐	☐
Q9	Luck will play a big part in determining how my knee improves.	☐	☐	☐	☐	☐	☐

		Strongly agree	Moderately agree	Slightly agree	Slightly disagree	Moderately disagree	Strongly disagree
Q10	In order for my knee to improve, it is up to other people to see that the right things happen.	☐	☐	☐	☐	☐	☐
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Q12	After my operation, the main thing which will affect my knee is what I do myself.	☐	☐	☐	☐	☐	☐
Q13	I deserve the credit when my knee improves and the blame when it gets worse.	☐	☐	☐	☐	☐	☐
Q14	Following doctor's order to the letter is the best way to see my knee improve.	☐	☐	☐	☐	☐	☐
Q15	If my knee does not improve, it's a matter of fate.	☐	☐	☐	☐	☐	☐
Q16	If I am lucky, my knee will get better.	☐	☐	☐	☐	☐	☐
Q17	If following surgery, my knee does not show any improvement, it is because I have not been taking proper care of myself.	☐	☐	☐	☐	☐	☐
Q18	The help I receive from other people will determine how soon my knee improves.	☐	☐	☐	☐	☐	☐

Thank you

Please now turn to section C of the questionnaire book

Section D

Please answer the following questions about problems which you have with your knee. Please read each statement carefully and then tick the appropriate box. Please remember that there are no right or wrong answers. Tick only one box for each question. Please answer every question.

1. During the past 4 weeks: How would you describe the pain you usually have from your knee?

A None ☐

B Very mild ☐

C Mild ☐

D Moderate ☐

E Severe ☐

---

2. During the past 4 weeks: Have you had any trouble with washing and drying yourself (all over) because of your knee?

A No trouble at all ☐

B Very little trouble ☐

C Moderate trouble ☐

D Extreme difficulty ☐

E Impossible to do ☐

---

3. During the past 4 weeks: Have you had any trouble getting in and out of a car or using public transport because of your knee?

A No trouble at all ☐

B Very little trouble ☐

C Moderate trouble ☐

D Extreme difficulty ☐

E Impossible to do ☐

---

4. During the past 4 weeks: For how long have you been able to walk before the pain from your knee becomes severe

A No pain/More than 30 minutes ☐

B 16 to 30 minutes ☐

C 5 to 15 minutes ☐

D Around the house only ☐

E Not at all – severe on walking ☐

---

5. During the past 4 weeks: After a meal (sat at a table), how painful has it been for you to stand up from a chair because of your knee?

A Not at all painful ☐

B Slightly painful ☐

C Moderately painful ☐

D Very painful ☐

E Unbearable ☐

---

6. During the past 4 weeks: Have you been limping when walking, because of your knee?

A Rarely/never ☐

B Sometimes or just at first ☐

C Often, not just at first ☐

D Most of the time ☐

E All of the time ☐

---

7. During the past 4 weeks: Could you kneel down and get up again afterwards

A Yes, easily ☐

B With a little difficulty ☐

C With moderate difficulty ☐

D With extreme difficulty ☐

E No, impossible ☐

---

8. During the past 4 weeks: Have you been troubled by pain from your knee in bed at night?

A No nights ☐

B Only 1 or 2 nights ☐

C Some nights ☐

D Most nights ☐

E Every night ☐

---

9. During the past 4 weeks: How much has the pain from your knee interfered with your usual work (including housework)?

A Not at all ☐

B A little bit ☐

C Moderately ☐

D Greatly ☐

E Totally ☐

---

10. During the past 4 weeks: Have you felt that your knee might suddenly "give way" or let you down?

A Rarely/never ☐

B Sometimes or just at first ☐

C Often, not just at first ☐

D Most of the time ☐

E All of the time ☐

---

11. During the past 4 weeks: Could you do the household shopping on your own?

A Yes, easily ☐

B With little difficulty ☐

C With moderate difficulty ☐

D With extreme difficulty ☐

E No, impossible ☐

---

12. During the past 4 weeks: Could you walk down a flight of stairs?

A Yes, easily ☐

B With little difficulty ☐

C With moderate difficulty ☐

D Most extreme difficulty ☐

E No, impossible ☐

Section E

Please answer the following questions about your knee and how it affects your ability to carry out tasks. Please read each statement carefully and then tick the appropriate box. Please remember that there are no wrong or right answers. Tick only one box for each question. Please answer every question.

1. How much pain do you have when you are walking?

A None ☐

B Mild or occasional ☐

C Moderate ☐

D Severe ☐

---

2. How much pain does your knee cause when going up and down stairs?

A None ☐

B Mild ☐

C Moderate ☐

D Severe ☐

---

3. How much pain does your knee cause when you are at rest?

A None ☐

B Mild ☐

C Moderate ☐

D Severe ☐

---

4. How does your knee affect your walking ability?

A I can walk unlimited distances. ☐

B I can walk 1 to 2 miles. ☐

C I can walk ½ mile to 1 mile. ☐

D I can walk 150 yards to ½ mile. ☐

E I can walk less than 150 yards. ☐

F I cannot walk at all. ☐

---

5. How do you go up stairs?

A I go upstairs normally one foot in front of the other. ☐

B I use the hand rail for balance. ☐

C I use the hand rail to pull myself up. ☐

D I cannot climb stairs. ☐

---

6. How do you go down stairs?

A I go down stairs normally one foot in front of the other. ☐

B I use the hand rail for balance. ☐

C I use the hand rail to support myself. ☐

D I cannot come down stairs. ☐

---

7. How do you get out of a chair?

A I get out of a chair normally without support. ☐

B I use the arm rests for balance. ☐

C I use the arm rests to push myself up. ☐

D I cannot get out of a chair. ☐

---

8. What type of support do you use when walking?

A None ☐

B Cane ☐

C 2 canes ☐

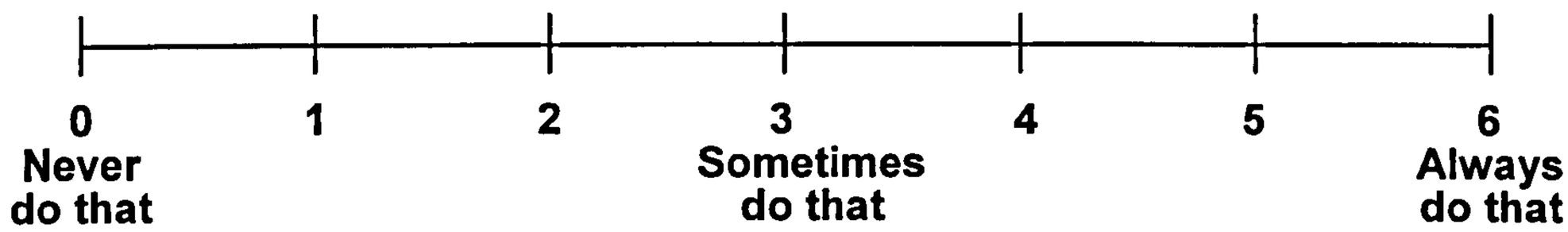
D Crutches ☐

E Walker ☐

Thank you.
Please turn to the next section

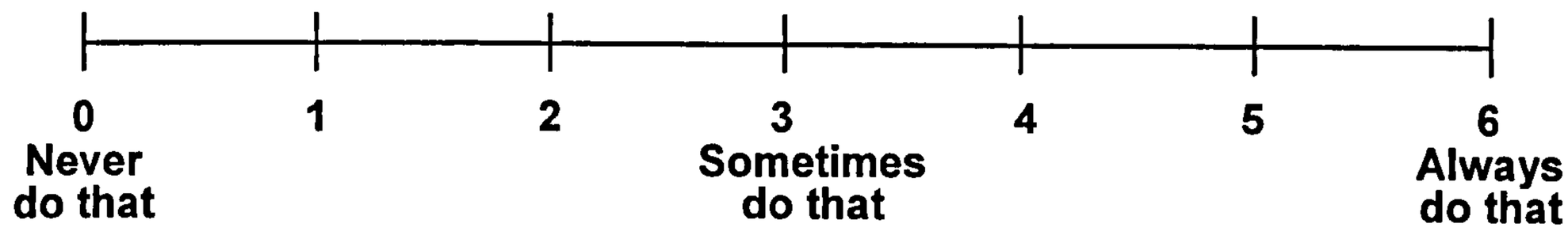
Section C: The Coping Strategies Questionnaire

Individuals who experience pain have developed a number of ways to cope, or deal with their pain. These include saying things to themselves when they experience pain, or engaging in different activities. Below is a list of things that people have reported doing when they feel pain. For each activity, I want you to indicate, using the scale below, how much you engage in that activity when you feel pain, where a 0 indicates you never do that when you are experiencing pain, a 3 indicates you sometimes do that when you are experiencing pain, and a 6 indicates you always do that when you are experiencing pain. *Please tick the appropriate box.* Remember, you can use any point along the scale.



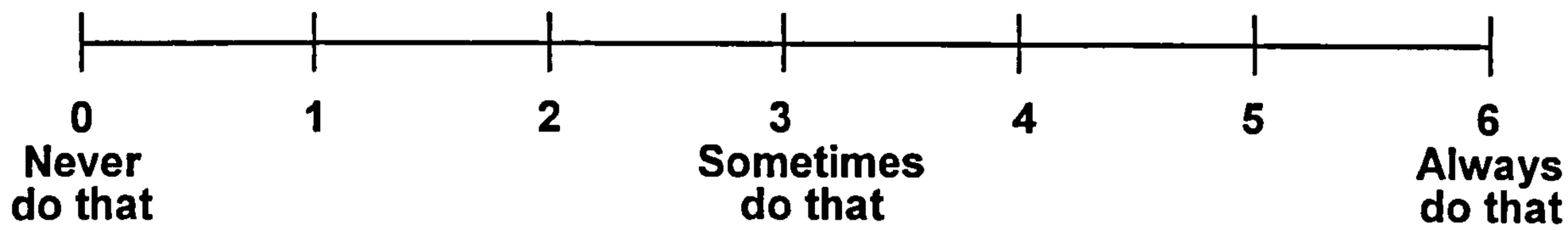
When I feel pain ...

		0	1	2	3	4	5	6
Q1	I try to feel distant from the pain, almost as if the pain was in somebody else's body.	☐	☐	☐	☐	☐	☐	☐
Q2	I leave the house and do something, such as going to the movies or shopping.	☐	☐	☐	☐	☐	☐	☐
Q3	I try to think of something pleasant	☐	☐	☐	☐	☐	☐	☐
Q4	I don't think of it as pain but rather as a dull or warm feeling.	☐	☐	☐	☐	☐	☐	☐
Q5	It is terrible and I feel it is never going to get any better.	☐	☐	☐	☐	☐	☐	☐
Q6	I tell myself to be brave and carry on despite the pain.	☐	☐	☐	☐	☐	☐	☐
Q7	I read.	☐	☐	☐	☐	☐	☐	☐
Q8	I tell myself that I can overcome the pain.	☐	☐	☐	☐	☐	☐	☐
Q9	I take my medication.	☐	☐	☐	☐	☐	☐	☐
Q10	I count numbers in my head or run a song through my mind.	☐	☐	☐	☐	☐	☐	☐
Q11	I just think of it as some other sensation, such as numbness.	☐	☐	☐	☐	☐	☐	☐



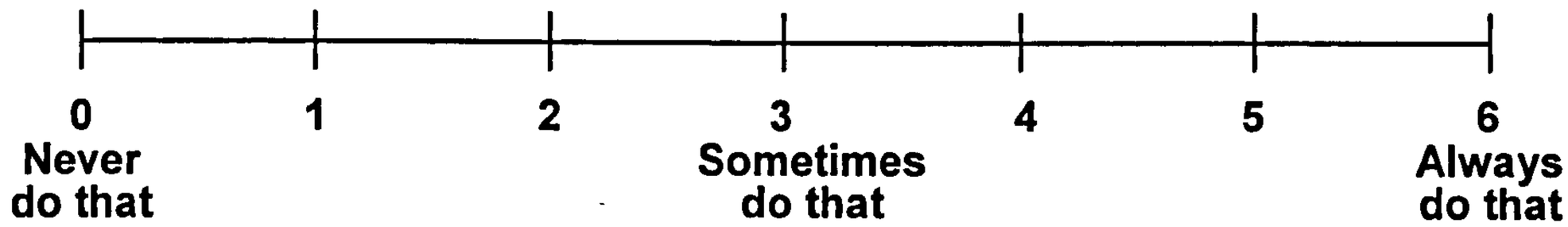
When I feel pain ...

		0	1	2	3	4	5	6
Q12	It is awful and I feel that it overwhelms me.	☐	☐	☐	☐	☐	☐	☐
Q13	I play mental games with myself to keep my mind off the pain.	☐	☐	☐	☐	☐	☐	☐
Q14	I feel my life isn't worth living.	☐	☐	☐	☐	☐	☐	☐
Q15	I know someday someone will be here to help me and it will go away for a while.	☐	☐	☐	☐	☐	☐	☐
Q16	I walk a lot.	☐	☐	☐	☐	☐	☐	☐
Q17	I pray to god it won't last long.	☐	☐	☐	☐	☐	☐	☐
Q18	I try not to think of it as my body, but rather as something separate from me.	☐	☐	☐	☐	☐	☐	☐
Q19	I relax.	☐	☐	☐	☐	☐	☐	☐
Q20	I don't think about the pain.	☐	☐	☐	☐	☐	☐	☐
Q21	I try to think years ahead, what everything will be like after I've gotten rid of the pain.	☐	☐	☐	☐	☐	☐	☐
Q22	I tell myself it doesn't hurt.	☐	☐	☐	☐	☐	☐	☐
Q23	I tell myself I can't let the pain stand in the way of what I have to do.	☐	☐	☐	☐	☐	☐	☐
Q24	I don't pay any attention to the pain.	☐	☐	☐	☐	☐	☐	☐
Q25	I have faith in doctors that someday there will be a cure for my pain.	☐	☐	☐	☐	☐	☐	☐
Q26	No matter how bad it gets, I know I can handle it.	☐	☐	☐	☐	☐	☐	☐
Q27	I pretend its not there.	☐	☐	☐	☐	☐	☐	☐



When I feel pain ...

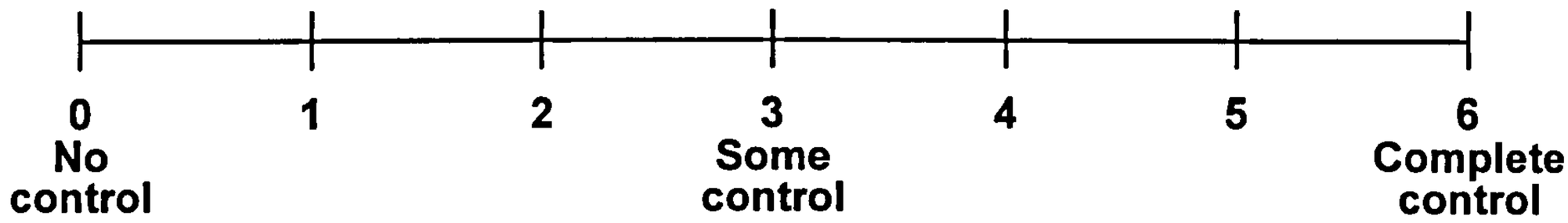
		0	1	2	3	4	5	6
Q28	I worry all the time about whether it will end.	☐	☐	☐	☐	☐	☐	☐
Q29	I lie down.	☐	☐	☐	☐	☐	☐	☐
Q30	I replay in my mind pleasant experiences in the past.	☐	☐	☐	☐	☐	☐	☐
Q31	I think of people I enjoy doing things with.	☐	☐	☐	☐	☐	☐	☐
Q32	I pray for the pain to stop.	☐	☐	☐	☐	☐	☐	☐
Q33	I take a shower or bath.	☐	☐	☐	☐	☐	☐	☐
Q34	I imagine that the pain is outside of my body.	☐	☐	☐	☐	☐	☐	☐
Q35	I just go on as if nothing happened.	☐	☐	☐	☐	☐	☐	☐
Q36	I see it as a challenge and don't let it bother me.	☐	☐	☐	☐	☐	☐	☐
Q37	Although it hurts, I just keep on going.	☐	☐	☐	☐	☐	☐	☐
Q38	I feel I can't stand it anymore.	☐	☐	☐	☐	☐	☐	☐
Q39	I try to be around other people.	☐	☐	☐	☐	☐	☐	☐
Q40	I ignore it.	☐	☐	☐	☐	☐	☐	☐
Q41	I rely on my faith in God.	☐	☐	☐	☐	☐	☐	☐
Q42	I feel like I can't go on.	☐	☐	☐	☐	☐	☐	☐
Q43	I think of things I enjoy doing.	☐	☐	☐	☐	☐	☐	☐
Q44	I do anything to get my mind off the pain.	☐	☐	☐	☐	☐	☐	☐
Q45	I do something I enjoy, such as watching TV or listening to music.	☐	☐	☐	☐	☐	☐	☐



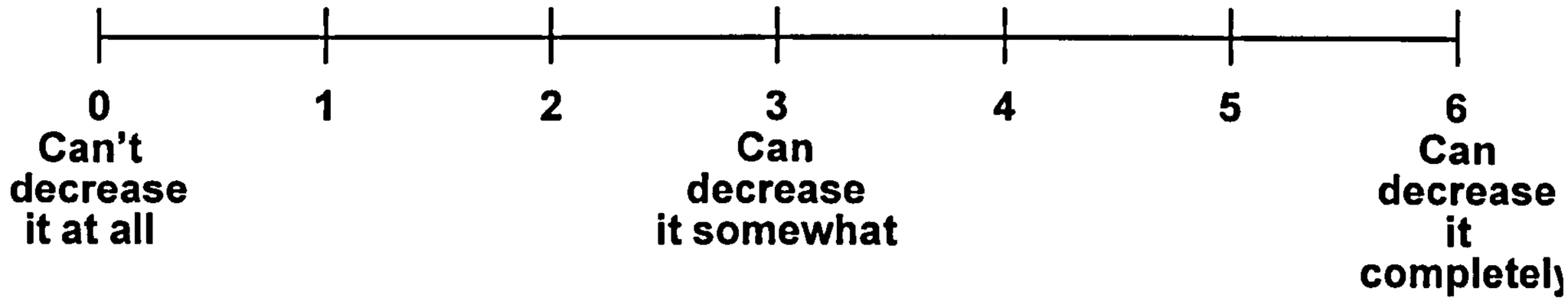
When I feel pain ...

	0	1	2	3	4	5	6
Q46 I pretend it's not a part of me.	☐	☐	☐	☐	☐	☐	☐
Q47 I do something active, like household chores or projects.	☐	☐	☐	☐	☐	☐	☐
Q48 I use a heating pad.	☐	☐	☐	☐	☐	☐	☐

Based on all the things you do to cope, or deal with your pain, on an average day, how much control do you feel you have over it? Please circle the appropriate number. Remember, you can circle any number along the scale.



Based on all the things you do to cope, or deal with your pain, on an average day, how much are you able to decrease it? Please circle the appropriate number. Remember, you can circle any number along the scale.



Thank you

Please now complete section D

Section F

Please complete the attached NEO Five Factor Inventory booklet with a pencil. Please follow the instructions as on the booklet.

Instructions for returning

Please check that you have completed all sections of the questionnaire and that you have only ticked one box per question. If you are unsure of the meaning of a question please contact Clare Gibson on 271 4861. After completing the questionnaire, please return in the prepaid envelope.

Name _____ Age _____ Gender _____ Today's date _____

1. I am not a worrier.
2. I like to have a lot of people around me.
3. I don't like to waste my time daydreaming.
4. I try to be courteous to everyone I meet.
5. I keep my belongings neat and clean.
6. I often feel inferior to others.
7. I laugh easily.
8. Once I find the right way to do something, I stick to it.
9. I often get into arguments with my family and co-workers.
10. I'm pretty good about pacing myself so as to get things done on time.
11. When I'm under a great deal of stress, sometimes I feel like I'm going to pieces.
12. I don't consider myself especially "light-hearted."
13. I am intrigued by the patterns I find in art and nature.
14. Some people think I'm selfish and egotistical.
15. I am not a very methodical person.
16. I rarely feel lonely or blue.
17. I really enjoy talking to people.
18. I believe letting students hear controversial speakers can only confuse and mislead them.
19. I would rather cooperate with others than compete with them.
20. I try to perform all the tasks assigned to me conscientiously.
21. I often feel tense and jittery.
22. I like to be where the action is.
23. Poetry has little or no effect on me.
24. I tend to be cynical and skeptical of others' intentions.
25. I have a clear set of goals and work toward them in an orderly fashion.
26. Sometimes I feel completely worthless.
27. I usually prefer to do things alone.
28. I often try new and foreign foods.
29. I believe that most people will take advantage of you if you let them.
30. I waste a lot of time before settling down to work.
31. I rarely feel fearful or anxious.
32. I often feel as if I'm bursting with energy.
33. I seldom notice the moods or feelings that different environments produce.
34. Most people I know like me.
35. I work hard to accomplish my goals.
36. I often get angry at the way people treat me.
37. I am a cheerful, high-spirited person.
38. I believe we should look to our religious authorities for decisions on moral issues.
39. Some people think of me as cold and calculating.
40. When I make a commitment, I can always be counted on to follow through.

NEO-FFI™

NEO Five-Factor Inventory™

Test Booklet-Form S (Adult)

Paul T. Costa, Jr., PhD, and Robert R. McCrae, PhD

Instructions

Write only where indicated in this booklet. Carefully read all of the instructions before beginning. This questionnaire contains 60 statements. Read each statement carefully. For each statement fill in the circle with the response that best represents your opinion. Make sure that your answer is in the correct box.

Fill in (SD) if you *strongly disagree* or the statement is definitely false.

Fill in (D) if you *disagree* or the statement is mostly false.

Fill in (N) if you are *neutral* on the statement, if you cannot decide, or if the statement is about equally true and false.

Fill in (A) if you *agree* or the statement is mostly true.

Fill in (SA) if you *strongly agree* or the statement is definitely true.

For example, if you strongly disagree or believe that a statement is definitely false, you would fill in the (SD) for that statement.

Example

● (D) (N) (A) (SA)

Fill in only one response for each statement. Respond to all of the statements, making sure that you fill in the correct response. **DO NOT ERASE!** If you need to change an answer, make an "X" through the incorrect response and then fill in the correct response.

Note that the responses are numbered in *rows*. Before responding to the statements, turn to the inside of the booklet and enter your name, age, gender, and today's date.

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9 8 7 6 5 4 3 Reorder #RO-5048 Printed in the U.S.A.

41. Too often, when things go wrong, I get discouraged and feel like giving up.
42. I am not a cheerful optimist.
43. Sometimes when I am reading poetry or looking at a work of art, I feel a chill or wave of excitement.
44. I'm hard-headed and tough-minded in my attitudes.
45. Sometimes I'm not as dependable or reliable as I should be.

46. I am seldom sad or depressed.
47. My life is fast-paced.
48. I have little interest in speculating on the nature of the universe or the human condition.
49. I generally try to be thoughtful and considerate.
50. I am a productive person who always gets the job done.

51. I often feel helpless and want someone else to solve my problems.
52. I am a very active person.
53. I have a lot of intellectual curiosity.
54. If I don't like people, I let them know it.
55. I never seem to be able to get organized.

56. At times I have been so ashamed I just wanted to hide.
57. I would rather go my own way than be a leader of others.
58. I often enjoy playing with theories or abstract ideas.
59. If necessary, I am willing to manipulate people to get what I want.
60. I strive for excellence in everything I do.

Enter your responses here—remember to enter responses *ACROSS the rows*.

SD = *Strongly Disagree*; D = *Disagree*; N = *Neutral*; A = *Agree*; SA = *Strongly Agree*

ENTER ACROSS

1 SD D N A SA	2 SD D N A SA	3 SD D N A SA	4 SD D N A SA	5 SD D N A SA
6 SD D N A SA	7 SD D N A SA	8 SD D N A SA	9 SD D N A SA	10 SD D N A SA
11 SD D N A SA	12 SD D N A SA	13 SD D N A SA	14 SD D N A SA	15 SD D N A SA
16 SD D N A SA	17 SD D N A SA	18 SD D N A SA	19 SD D N A SA	20 SD D N A SA
21 SD D N A SA	22 SD D N A SA	23 SD D N A SA	24 SD D N A SA	25 SD D N A SA
26 SD D N A SA	27 SD D N A SA	28 SD D N A SA	29 SD D N A SA	30 SD D N A SA
31 SD D N A SA	32 SD D N A SA	33 SD D N A SA	34 SD D N A SA	35 SD D N A SA
36 SD D N A SA	37 SD D N A SA	38 SD D N A SA	39 SD D N A SA	40 SD D N A SA
41 SD D N A SA	42 SD D N A SA	43 SD D N A SA	44 SD D N A SA	45 SD D N A SA
46 SD D N A SA	47 SD D N A SA	48 SD D N A SA	49 SD D N A SA	50 SD D N A SA
51 SD D N A SA	52 SD D N A SA	53 SD D N A SA	54 SD D N A SA	55 SD D N A SA
56 SD D N A SA	57 SD D N A SA	58 SD D N A SA	59 SD D N A SA	60 SD D N A SA

Have you responded to all of the statements? _____ Yes _____ No

Have you entered your responses in the correct boxes? _____ Yes _____ No

Have you responded accurately and honestly? _____ Yes _____ No

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SCORING INSTRUCTIONS FOR THE MHLC SCALES

SUBSCALE	FORM(s)	POSSIBLE RANGE	ITEMS
Internal	A, B, C	6 - 36	1, 6, 8, 12, 13, 17
Chance	A, B, C	6 - 36	2, 4, 9, 11, 15, 16
Powerful Others	A, B	6 - 36	3, 5, 7, 10, 14, 18
Doctors	C	3 - 18	3, 5, 14
Other People	C	3 - 18	7, 10, 18

COPING STRATEGIES QUESTIONNAIRE

SCORE KEY

DIVERTING ATTENTION.....3 + 10 + 13 + 30 + 31 + 43

REINTERPRETING PAIN SENSATIONS.....1 + 4 + 11 + 18 + 34 + 46

COPING SELF STATEMENTS.....6 + 8 + 23 + 26 + 36 + 37

IGNORING SENSATIONS.....20 + 22 + 24 + 27 + 35 + 40

PRAYING/HOPING.....15 + 17 + 21 + 25 + 32 + 41

CATATROPHIZING..... 5 + 12 + 14 + 28 + 38 + 42

INCREASE BEHAVIORAL ACTIVITIES.....2 + 7 + 39 + 44 + 45 + 47

FILLER ITEMS (NOT SCORED).....9, 16, 19, 29, 33, 48

Sum the COLUMNS to obtain raw scores for N, E, O, A, and C.
Plot raw scores on facing page to obtain *T* scores.

1 (4)(3)(2)(1)(0)	2 (0)(1)(2)(3)(4)	3 (4)(3)(2)(1)(0)	4 (0)(1)(2)(3)(4)	5 (0)(1)(2)(3)(4)
6 (0)(1)(2)(3)(4)	7 (0)(1)(2)(3)(4)	8 (4)(3)(2)(1)(0)	9 (4)(3)(2)(1)(0)	10 (0)(1)(2)(3)(4)
11 (0)(1)(2)(3)(4)	12 (4)(3)(2)(1)(0)	13 (0)(1)(2)(3)(4)	14 (4)(3)(2)(1)(0)	15 (4)(3)(2)(1)(0)
16 (4)(3)(2)(1)(0)	17 (0)(1)(2)(3)(4)	18 (4)(3)(2)(1)(0)	19 (0)(1)(2)(3)(4)	20 (0)(1)(2)(3)(4)
21 (0)(1)(2)(3)(4)	22 (0)(1)(2)(3)(4)	23 (4)(3)(2)(1)(0)	24 (4)(3)(2)(1)(0)	25 (0)(1)(2)(3)(4)
26 (0)(1)(2)(3)(4)	27 (4)(3)(2)(1)(0)	28 (0)(1)(2)(3)(4)	29 (4)(3)(2)(1)(0)	30 (4)(3)(2)(1)(0)
31 (4)(3)(2)(1)(0)	32 (0)(1)(2)(3)(4)	33 (4)(3)(2)(1)(0)	34 (0)(1)(2)(3)(4)	35 (0)(1)(2)(3)(4)
36 (0)(1)(2)(3)(4)	37 (0)(1)(2)(3)(4)	38 (4)(3)(2)(1)(0)	39 (4)(3)(2)(1)(0)	40 (0)(1)(2)(3)(4)
41 (0)(1)(2)(3)(4)	42 (4)(3)(2)(1)(0)	43 (0)(1)(2)(3)(4)	44 (4)(3)(2)(1)(0)	45 (4)(3)(2)(1)(0)
46 (4)(3)(2)(1)(0)	47 (0)(1)(2)(3)(4)	48 (4)(3)(2)(1)(0)	49 (0)(1)(2)(3)(4)	50 (0)(1)(2)(3)(4)
51 (0)(1)(2)(3)(4)	52 (0)(1)(2)(3)(4)	53 (0)(1)(2)(3)(4)	54 (4)(3)(2)(1)(0)	55 (4)(3)(2)(1)(0)
56 (0)(1)(2)(3)(4)	57 (4)(3)(2)(1)(0)	58 (0)(1)(2)(3)(4)	59 (4)(3)(2)(1)(0)	60 (0)(1)(2)(3)(4)

N = _____ E = _____ O = _____ A = _____ C = _____

Have you responded to all of the statements? _____ Yes _____ No

Do not score if this response is marked "No." _____ Yes _____ No

Do not score if this response is marked "No." _____ Yes _____ No

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Name _____ Age _____ Gender _____ Today's date _____

NEO Five-Factor Inventory Profile
Form S (Adult)

Male

T Score		N	E	O	A	C
Very High	≥75	-	-	-	45	
	74		-	-	-	
	73	35				-
	72	-	40	40	-	-
	71	-				
	70		-	-	-	-
	69	-		-		
	68	-	-		-	45
	67	30	-	-		-
	66				40	
High	65	-	-	-		-
	64	-		35	-	
	63	-	35			-
	62		-	-	-	-
	61	-				
	60	25	-	-	-	40
	59	-				
	58		-	-	-	-
	57	-		-		-
	56	-	-		35	
Average	55	-	30	30		-
	54				-	
	53	20	-	-		-
	52	-		-	-	35
	51	-	-			
	50		-	-	-	-
	49	-				
	48	-	-	-	-	-
	47	15				
	46		25	25	30	-
	45	-		-		-
Low	44	-	-		-	
	43		-	-		30
	42	-			-	
	41	-	-	-		-
	40	10		-	-	-
	39		-			
	38	-	20	20	-	-
	37	-				
	36	-	-	-	25	-
	35					25
Very Low	34	-	-	-	-	
	33	5	-	-		-
	32	-			-	
	31		-	-		-
	30	-			-	-
	29	-	15	15		
	28	-		-	-	-
	27		-			
	26	0	-	-	20	20
	≤25		-	-	-	-

Female

T Score		N	E	O	A	C
Very High	≥75	40	-	-	-	
	74	-	-	-	45	
	73	-				
	72	-	-	40	-	-
	71					-
	70	-	40	-		
	69	35	-	-	-	-
	68	-				
	67		-	-	-	45
	66	-				-
High	65	-	-	-	-	
	64	-		35		-
	63		-		40	
	62	30	35	-		-
	61	-			-	
	60	-	-	-		-
	59			-	-	40
	58	-	-			
	57	-	-	-	-	-
	56	25				
Average	55	-	-	30	-	-
	54					
	53	-	30	-	35	-
	52	-		-		-
	51	-	-		-	
	50		-	-		35
	49	20				
	48	-	-	-	-	-
	47	-		25		
	46		-		-	-
	45	-	25	-		-
Low	44	-			-	
	43	15	-	-		-
	42			-	30	
	41	-	-			30
	40	-		-	-	-
	39	-	-			
	38		-	20	-	-
	37	-				
	36	10	20	-	-	-
	35	-		-		
Very Low	34	-	-		-	-
	33		-	-		25
	32	-			25	
	31	-	-	-		-
	30	5		15		
	29		-		-	-
	28	-		-		
	27	-	15		-	-
	26	-	-	-		-
	≤25	-	-	-	-	20

Combined

T Score		N	E	O	A	C
Very High	≥75	-	-	-	-	
	74		-	-	45	
	73	-	-			-
	72	-		40	-	
	71	35	40			-
	70			-	-	
	69	-	-	-		-
	68	-	-		-	45
	67	-		-		
	66	-	-		-	-
High	65			-		
	64	30	-	35	40	-
	63	-				-
	62	-	35	-	-	
	61		-			-
	60	-		-	-	
	59	-	-	-		40
	58	25			-	-
	57		-	-		
	56	-	-		-	-
Average	55	-		30		
	54	-	30		35	-
	53	-		-		
	52		-	-	-	-
	51	20				35
	50	-	-	-	-	
	49	-	-			-
	48			-	-	
	47	-	-	25		-
	46	-			-	-
	45	15	25	-		
Low	44		-		30	-
	43	-		-		
	42	-	-		-	30
	41	-		-		-
	40		-	-	-	
	39	-	-			-
	38	10		20	-	
	37	-	20			-
	36	-		-	-	
	35		-	-		-
Very Low	34	-			25	25
	33	-	-	-		
	32	5	-		-	-
	31			-		
	30	-	-		-	-
	29	-		15		-
	28	-	15	-	-	
	27		-			-
	26	-		-	-	
	≤25	0	-	-	20	20

NEO-FFI™

NEO Five-Factor Inventory™

Test Booklet–Form S (Adult)

Paul T. Costa, Jr., PhD, and Robert R. McCrae, PhD

Instructions

Write only where indicated in this booklet. Carefully read all of the instructions before beginning. This questionnaire contains 60 statements. Read each statement carefully. For each statement fill in the circle with the response that best represents your opinion. Make sure that your answer is in the correct box.

Fill in (SD) if you *strongly disagree* or the statement is definitely false.

Fill in (D) if you *disagree* or the statement is mostly false.

Fill in (N) if you are *neutral* on the statement, if you cannot decide, or if the statement is about equally true and false.

Fill in (A) if you *agree* or the statement is mostly true.

Fill in (SA) if you *strongly agree* or the statement is definitely true.

For example, if you strongly disagree or believe that a statement is definitely false, you would fill in the (SD) for that statement.

Example

● (D) (N) (A) (SA)

Fill in only one response for each statement. Respond to all of the statements, making sure that you fill in the correct response. **DO NOT ERASE!** If you need to change an answer, make an "X" through the incorrect response and then fill in the correct response.

Note that the responses are numbered in *rows*. Before responding to the statements, turn to the inside of the booklet and enter your name, age, gender, and today's date.

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Scoring System for Oxford Hip Score/Oxford Knee Score

For each question the scoring is as follows:

A	1
B	2
C	3
D	4
E	5

The scores for the 12 items is added up giving a total possible score of 12 (least disability) to 60 (most disability).

Scoring for Self Report Harris Hip Score

Question	Response	Score
1	A	44
	B	40
	C	30
	D	20
	E	10
	F	0

Question	Response	Score
2	A	11
	B	7
	C	5
	D	2
	E	3
	F	0
	G	0

Question	Response	Score
3	A	11
	B	8
	C	5
	D	0

4	A	11
	B	8
	C	5
	D	2
	E	0

Question	Response	Score
5	A	4
	B	2
	C	1
	D	0

6	A	4
	B	2
	C	0

7	A	5
	B	3
	C	0

Mark scheme for Knee Society Knee Score Functional Component

Q4	A	55
	B	50
	C	35
	D	25
	E	15
	F	0

Q5	A	15
	B	12
	C	5
	D	0

Q6	A	15
	B	12
	C	5
	D	0

Q7	A	15
	B	12
	C	5
	D	0

Deductions

Q8	A	0
	B	-2
	C	-4
	D	-10
	E	-10

Mark Scheme for the Knee Society Knee Score Pain Component

Q1	A	35
	B	30
	C	15
	D	0

Q2	A	15
	B	10
	C	5
	D	0

Deductions

Q3	A	0
	B	-5
	C	-10
	D	-15

Harris System of Hip Range of Motion

Movement	Arc of motion	Index	Maximum possible
Flexion	0-45°	1.0	45
	45-90°	0.6	27
	90-110°	0.3	6
	110-130°	0.0	0
			Total possible = 78
Abduction	0-15°	0.8	12
	15-20°	0.3	1.5
	20-45°	0.0	0.0
			Total possible = 13.5
External rotation in extension	0-15°	0.4	6
	Over 15°	0.0	0
			Total possible = 6
Internal rotation in extension	Any	0.0	0
Adduction	0-15°	0.2	3
	Over 15°	0.0	0
			Total possible = 3
Extension	Any	0.0	0
Total Motion point value			**100.5**

Knee Society Knee Score Range of Motion Component

Component	Range of motion	Score
Range of motion	Score calculated ROM in degrees/5	
Medio-lateral stability	0-5mm	15
	5-10mm	10
	> 10mm	5
Anterio-posterior stability	0-5mm	10
	5-10mm	8
	> 10mm	5
Deductions		
Extension lag	0°	0
	$< 4^{o}$	-2
	$5\text{-}10^{o}$	-5
	$>11^{0}$	-10
Flexion contracture	$<5^{o}$	0
	$6\text{-}10^{o}$	-5
	$11\text{-}20^{o}$	-10
	20°	-15

Appendix 6

Questionnaire Analysis

Test Re-Test Reliability of CSQ

The Coping Strategies Questionnaire (CSQ) was administered (where possible) to participants at two time points within the study. The participants first completed the CSQ with the main battery of questionnaires as soon as possible after recruitment. The participants then completed a second copy of the questionnaire a couple of days before their surgery. This was done in order to ensure the most update data at the time of surgery and also to enable test re-test reliability of the CSQ in patients with OA undergoing THR/TKR. The number of days between the two points ranged from 11 to 307 days (mode = 14, 31, median = 47) in the hip study and 15 to 210 (mode = 16, 33, 41, 43, 50, 73, median = 50) in the knee study.

Test re-test reliability was calculated using the transformed data. Details of the transformations can be found in the Appendix pages 635 (hip) and 645 (knee). Table A6.1 reports the test re-test reliability of the coping strategies whilst table 2 reports the test re-test reliability of ratings of coping effectiveness.

Table A6.1: Test re-test reliability of CSQ subscales in hip and knee studies

Coping Strategy	Correlation co-efficient	
	Hip study	Knee study
Diverting attention	.78***	.52***
Reinterpreting pain sensations	.73***	.57***
Coping self statements	.64***	.58***
Ignoring sensations	.65***	.61***
Praying/hoping	.77**	.74***
Catastrophizing	.65***	.65***
Increasing behavioural activities	.69***	.55***

Note: *** = $p \leq .001$, hip study n = 69, knee study n = 39.

Table A6.2: Test re-test reliability of coping strategy effectiveness in hip and knee studies

Ratings of coping strategy effectiveness	Correlation coefficient	
	Hip study	Knee study
Controlling pain	.67***	.70***
Decreasing pain	.51***	.41*

Note: *** = p ≤ .001, * = p ≤ .01, hip study n = 69, knee study n = 39.

The results of table 1 and table 2 indicate that there was greater agreement in responses at the two time points in the hip study than compared to the knee study. This may be due to the greater number of participants completing the CSQ at both time points within the hip study. Most of the coping strategies were found to be moderately reliable over time.

The factor with the lowest test re-test reliability in both studies was ratings of ability to decrease pain; r = .51 in the hip study and r = .41 in the knee study. This is in agreement with previous findings. Main and Waddell (1991) assessed the test re-test reliability of the CSQ in back pain patients over a three-day period. They reported a correlation coefficient of .75 for decreasing pain. Keefe et al (1990a;1990b) assessed the test re-test reliability in participants with OA of the knee. They reported the test re-test reliability for decreasing pain at six-months was .38. The values from the hip and knee studies fall somewhere in between these two figures; this is to be expected as they are measured at a time point in between.

The tables demonstrate the coping strategies to be moderately stable over time. Coping efficacy is more variable. Due to variability in score should the study be completed again in the future it would be beneficial to have score on CSQ recorded at each time point where data is collected.

References

1. Keefe FJ, Caldwell DS, Williams DA, Gillespie KM. Pain coping skills training in the management of osteoarthritic knee pain: II. Follow-up results. Behavior Therapy 1990a;21:435-447.

2. Keefe FJ, Caldwell DS, Williams DA, Gillespie KM, et al. Pain coping skills in the management of osteoarthritic knee pain: A comparative study. Behavior Therapy 1990b;21:49-62.

3. Main CJ, Waddell G. A comparison of cognitive measures in low back pain: statistical structure and clinical validity at initial assessment. Pain 1991;46:287-298.

Correlations between Psychological Variables

The original protocol (submitted to the ethics committee) stated that a factor analysis or principal components analysis would be undertaken to assess whether the psychological variables grouped on certain factors. These factors would then be used in the multiple regression analyses to assess the relationship between personality and pain and function.

Tables A6.3 (hip) and A6.4 (knee) contain the correlation matrices for the psychological variables. The correlation matrices were used using the transformed data. Details of the transformations used can be found in the Appendix 7.

In general, the correlations were of a magnitude that was to be expected when correlating psychological variables and therefore it was decided not to undertake a principal component analysis and use each individual variable in the regression analyses. However, some interesting points about the relationships between the psychological variables are discussed below tables A6.3 and A6.4.

Table A6.3: Correlation matrix of psychological factors from hip study

NEO-FFI[a]				MHLC[a]				CSQ[b]										
E	OTE	A	Co	I	Ch	D	O	DA	RPS	CSS	IS	P/H	Cat	IBA	CP	DP		
-.53***	.04	-.30**	-.29**	-.02	.10	.12	-.00	-.01	-.03	-.29**	-.26**	.07	.43***	.02	-.20*	-.06	N	NEO-FFI[a]
	.21*	.27**	.44***	.03	-.07	.04	.01	.19	.13	.33**	.19*	.05	-.09	.20*	.24*	.08	E	
		-.04	.12	-.03	-.18	.02	-.04	.05	.12	-.05	.09	-.21*	-.05	-.04	.12	-.06	OTE	
			.38***	-.19	-.02	-.07	-.17	.23*	.06	.11	.01	.10	-.00	.22*	.12	.24*	A	
				-.05	-.04	-.13	.04	.00	.07	.21*	.15	.03	-.05	.07	.13	.09	Co	
					.30**	.04	.01	.07	.19	.20*	.24*	.14	.01	.01	-.03	.08	I	MHLC[b]
						.23*	.14	.08	.01	.16	.17	.11	.02	.05	.19	.09	Ch	
							.49***	.25*	.16	.05	-.05	.39***	.25*	.26**	-.00	-.08	D	
								.07	.16	.01	.05	.34***	.15	.08	.07	-.06	O	
									.51***	.20*	.08	.54***	.34***	.72***	.24*	.33***	DA	CSQ[c]
										.33***	.37***	.31***	.10	.29**	.22*	.32***	RPS	
											.59***	.22*	.04	.33***	.34***	.30**	CSS	
												-.14	-.21*	.07	.33***	.29**	IS	
													.62***	.54***	.06	.17	P/H	
														.36***	-.19	.11	Cat	
															.27**	.38***	IBA	
																.55***	CP	

Note: [a] n = 104, [b] n = 103, * = p < .05, ** = p < .01, *** = p < .001. Significant correlations are in bold. Abbreviations as follows: NEO-FFI (NEO Five Factor Inventory): N = Neuroticism, E = Extraversion, OTE = Openness to Experience, A = Agreeableness, Co = Conscientiousness; MHLC (Multidimensional Health Locus of Control Questionnaire): I: Internal, Ch = Chance, D = Doctors, O = Others; CSQ (Coping Strategies Questionnaire): DA = Diverting attention, RPS = Reinterpreting pain sensations, CSS = Coping self statements, IS = Ignoring sensations, P/H = Praying/hoping, Cat = Catastrophizing, IBA = Increasing behavioural activities, CP = controlling pain, DP = Decreasing pain.

Table A6.4: Correlation matrix of psychological factors from knee study

NEO-FFI				MHLC				CSQ										
E	OTE	A	Co	I	Ch	D	O	DA	RPS	CSS	IS	P/H	Cat	IBA	CP	DP		
-.51***	**-.26***	-.21	**-.37****	.07	**.35****	**.38*****	.16	.10	.06	**-.33****	-.22	**.41*****	**.40*****	.11	**-.30***	**-.31****	N	NEO-FFI
	.31***	.03	**.25***	.07	**-.30***	-.15	-.21	-.01	.19	**.30***	**.28***	-.17	**-.35****	.16	.18	.17	E	
		.04	-.08	.11	**-.28***	-.14	**-.34****	.07	**.25***	.02	**.26***	-.10	**-.25***	.09	.23	.20	OTE	
			.12	.05	-.00	.09	-.04	.15	.03	-.02	-.09	-.13	-.10	.09	-.04	.14	A	
				.00	-.14	-.15	**-.25***	.10	.02	**.29***	.11	-.19	-.17	-.15	**.24***	**.28***	Co	
					.25*	**.24***	-.03	.22	.19	**.31****	.12	**.26***	.09	**.44*****	-.06	-.03	I	MHLC
						.23	.22	**.36****	.03	-.04	-.05	**.35****	**.70*****	.18	**-.31***	**-.32****	Ch	
							.55***	.15	.02	.03	-.10	**.32****	.20	**.34****	**-.28***	-.17	D	
								.08	-.19	-.01	-.20	.22	.18	.15	-.16	-.11	O	
									.52***	**.24***	**.33****	**.35****	**.25***	**.61*****	.22	.08	DA	CSQ
										.39***	**.66*****	**.34****	.14	**.54*****	**.35****	.20	RPS	
											.64***	**.24***	-.23	**.40*****	**.38*****	**.27***	CSS	
												.13	-.13	**.33****	**.48*****	**.24***	IS	
													.38***	**.48*****	.00	-.04	P/H	
														.14	**-.37****	**-.35****	Cat	
															.13	.11	IBA	
																.49***	CP	

Note: n = 70, * = p < .05, ** = p < .01, *** = p < .001. Significant correlations are in bold. Abbreviations as follows: NEO-FFI (NEO Five Factor Inventory): N = Neuroticism, E = Extraversion, OTE = Openness to Experience, A = Agreeableness, Co = Conscientiousness; MHLC (Multidimensional Health Locus of Control Questionnaire): I: Internal, Ch = Chance, D = Doctors, O = Others; CSQ (Coping Strategies Questionnaire): DA = Diverting attention, RPS = Reinterpreting pain sensations, CSS = Coping self statements, IS = Ignoring sensations, P/H = Praying/hoping, Cat = Catastrophizing, IBA = Increasing behavioural activities, CP = controlling pain, DP = Decreasing pain.

Several of the correlations seen were within the same instrument (e.g. in the NEO-FFI Neuroticism is negatively correlated with extraversion, and within the CSQ, increasing behavioural activities is strongly positively correlated with diverting attention), however, correlations were also found between psychological variables from different instruments.

More significant correlations existed in the knee study than in the hip study. Many of the correlations seen in the hip study were replicated in the knee study. However, there were also some differences in findings between the two studies. Tables A6.5 (NEO-FFI), A6.6 (MHLC), and A6.7 (CSQ) compare the similarities and differences in findings between the two studies.

Table A6.5: Comparison of significant correlations (p < .05) between the NEO-FFI and other psychological variables in the hip and knee studies

NEO-FFI	With	Hip study	Hip & Knee	Knee study
Neuroticism	NEO-FFI	Agreeableness (-)	Extraversion (-) Conscientious. (-)	Openness to experience (-)
	MHLC			Chance (+) Doctors (+)
	CSQ	Ignoring sensations(-)	Coping self statements (-) Catastrophizing (+) Controlling pain (-)	Praying/Hoping (+) Decreasing pain (-)
Extraversion	NEO-FFI	Agreeableness (+)	Neuroticism (-) Openness to experience (+) Conscientious. (+)	
	MHLC			Chance (-)
	CSQ	Increas. behavioural activities (+) Controlling pain (+)	Coping self statements (+) Ignor. sensations (+)	Catastrophizing (-)
Openness to experience	NEO-FFI		Extraversion (+)	
	MHLC			Chance (-) Others (-)
	CSQ	Praying/hoping (-)		Reinterpreting pain sensations (+) Ignor. sensations (+) Catastrophizing (-)
Agreeableness	NEO-FFI	Neuroticism (-) Extraversion (+) Conscientious. (+)		
	CSQ	Divert. attention (+) Increas. behavioural activities (+) Decreasing pain (+)		
Conscientiousness	NEO-FFI	Agreeableness (+)	Neuroticism (-) Extraversion (+)	
	CSQ		Coping self statements (+)	Controlling pain (+) Decreasing pain (+)

Note: Direction of correlation in (). Abbreviations: Conscientious. = Conscientiousness, Increas. behavioural activities = increasing behavioural activities, ignor. sensations = ignoring sensations.

Table A6.6: Comparison of significant correlations (p < .05) between the MHLC and other psychological variables in the hip and knee studies

MHLC	With	Hip study	Hip & Knee	Knee study
Internal	MHLC		Chance (+)	Doctors (+)
	CSQ	Ignor. sensations (+)	Coping self statements (+)	Praying/hoping (+) Increas. behavioural activities (+)
Chance	NEO-FFI			Neuroticism (+) Extraversion (-) Openness to experience (-)
	MHLC	Doctors (+)	Internal (+)	
	CSQ			Divert. attention (+) Praying/hoping (+) Catastrophizing (+) Controlling pain (-) Decreasing pain (-)
Doctors	NEO-FFI			Neuroticism (+)
	MHLC	Chance (+)	Others (+)	Internal (+)
	CSQ	Catastrophizing (+)	Praying/hoping (+) Increas. behavioural activities (+)	Controlling pain (-)
Other	NEO-FFI			Openness to experience (-) Conscientious. (-)
	MHLC		Doctors (+)	
	CSQ	Praying/hoping (+)		

Note: Direction of correlation in (). Abbreviations: ignor. sensations = ignoring sensations, Increas. behavioural activities = increasing behavioural activities, divert. attention = diverting attention, Conscientious. = Conscientiousness.

Table A6.7: Comparison of significant correlations (p < .05) between the CSQ and other psychological variables in the hip and knee studies

CSQ	With	Hip study	Hip & Knee	Knee study
Diverting attention	NEO-FFI	Agreeableness (+)		
	MHLC	Doctors (+)		Chance (+)
	CSQ	Controlling pain (+) Decreasing pain (+)	Reinterpreting pain sensations (+) Coping self statements (+) Praying/hoping (+) Catastrophizing (+) Increas. behavioural activities (+)	Ignor. sensations (+)
Reinterpreting pain sensations	NEO-FFi			Openness to experience (+)
	CSQ	Decreasing pain (+)	Divert. attention (+) Coping self statement (+) Ignor. sensations (+) Praying/hoping (+) Increas. behavioural activities (+) Controlling pain (+)	
Coping self statements	NEO-FFI		Neuroticism (-) Extraversion (+) Conscientious. (+)	
	MHLC		Internal (+)	
	CSQ		Divert. attention (+) Reinterpreting pain sensations (+) Ignor. sensations (+) Praying/hoping (+) Increas. behavioural activities (+) Controlling pain (+) Decreasing pain (+)	

Note: Direction of correlation in (). Abbreviations: ignor. sensations = ignoring sensations, Increas. behavioural activities = increasing behavioural activities, divert. attention = diverting attention, Conscientious. = Conscientiousness.

Table A6.7 Continued: Comparison of significant correlations (p < .05) between the CSQ and other psychological variables in the hip and knee studies

CSQ	With	Hip study	Hip & Knee	Knee study
Ignoring sensations	NEO-FFI	Neuroticism (-)	Extraversion (+)	Openness to experience (+)
	MHLC	Internal (+)		
	CSQ	Catastrophizing (-)	Reinterpreting pain sensations (+) Coping self statements (+) Controlling pain (+) Decreasing pain (+)	Divert. attention (+) Increas. behavioural activities (+)
Praying/hoping	NEO-FFI			Neuroticism (+)
	MHLC	Others (+)	Doctors (+)	Internal (+) Chance (+)
	CSQ		Divert. attention (+) Reinterpreting pain sensations (+) Coping self statements (+) Catastrophizing (+) Increas. behavioural activities (+)	
Catastrophizing	NEO-FFI		Neuroticism (+)	Extraversion (-) Openness to experience (-)
	MHLC	Doctors (+)		Chance (+)
	CSQ	Increas. behavioural activities (+)	Divert. attention (+) Praying/hoping (+)	Controlling pain (-) Decreasing pain (-)
Increasing behavioural activities	NEO-FFI	Extraversion (+) Agreeableness (+)		
	MHLC		Doctors (+)	Internal (+)
	CSQ	Catastrophizing (+)	Divert. attention (+) Reinterpreting pain sensations (+) Coping self statements (+) Praying/hoping (+)	Ignor. sensations (+)

Note: Direction of correlation in (). Abbreviations: ignor. sensations = ignoring sensations, Increas. behavioural activities = increasing behavioural activities, divert. attention = diverting attention, Conscientious. = Conscientiousness.

Table A6.7 Continued: Comparison of significant correlations (p < .05) between the CSQ and other psychological variables in the hip and knee studies

CSQ	With	Hip study	Hip & Knee	Knee study
Controlling pain	NEO-FFI	Extraversion (+)	Neuroticism (-)	Conscientious. (+)
	MHLC			Chance (-) Doctors (-)
	CSQ	Divert. attention (+) Increas. behavioural activities (+)	Reinterpreting pain sensations (+) Coping self statements (+) Ignor. sensations (+) Decreasing pain (+)	Catastrophizing (-)
Decreasing pain	NEO-FFI	Agreeableness (+)		Neuroticism (-) Conscientious. (+)
	MHLC			Chance (-)
	CSQ	Divert. attention (+) Reinterpreting pain sensations (+) Increas. behavioural activities (+)	Coping self statements (+) Ignor. sensations (+) Controlling pain (+)	Catastrophizing (-)

Note: Direction of correlation in (). Abbreviations: Conscientious. = Conscientiousness, Increas. behavioural activities = increasing behavioural activities, ignor. sensations = ignoring sensations.

Discussion of findings

As stated above, more significant correlations existed in the knee study than in the hip study. The tables above summarise the similarities and differences in findings between the two studies. These shall now be discussed.

NEO-FFI

Neuroticism, extraversion and conscientiousness correlated significantly with a number of other psychological factors in both the hip and knee studies. Conscientiousness had the least significant number of correlations of the five personality traits. Agreeableness did not correlate significantly with any psychological in the knee study; contrastingly, it correlated significantly

with a number of variables in the hip study. Openness to experience correlated with a number of psychological variables in the knee study but was only correlated significantly with two variables in the hip study.

Neuroticism positively associated with maladaptive coping strategies and negatively associated with associated with active coping strategies and pain control efficacy. Of interest are the moderate strength correlations between neuroticism and catastrophizing in both studies, and the correlation between neuroticism and chance in the knee study.

Extraversion, Openness to experience, agreeableness and conscientiousness positively associated with active coping strategies and negatively with maladaptive coping strategies and beliefs relating to an external locus of control.

MHLC

Many more significant relationships between the locus of control beliefs (measured using MHLC) and the other psychological variables were recorded in the knee study (than the hip study). A chance locus of control was found to be related to many psychological variables. Chance was associated positively with neuroticism, maladaptive coping strategies, and with poor pain control efficacy. Of particular interest is the strong relationship between chance and catastrophizing ($r = .7$) in the knee study.

CSQ

Many significant relationships existed between the coping strategies in both studies. As many are of a weak magnitude, this is likely to be indicative of a tendency to use coping strategies rather than specific coping strategies relating to each other. Of interest, however, are the strong relationships between diverting attention and reinterpreting pain sensations, diverting attention and increasing behavioural activities, coping self statements and ignoring sensations, and praying/hoping and catastrophizing. The strength of these relationships suggests that these coping strategies are tapping into similar coping processes. Controlling pain and decreasing pain were strongly correlated with each other and correlated with a number of the psychological

variables. As is seen in the compare and contrast chapter, pain control efficacy is central to theory of how psychological variables exert their actions on pain and disability in THR and TKR patients.

Analysis of Joint Specific Questionnaires: The Patients' Perspective of the Oxford Hip Score and the Self-Report Harris Hip Score

Chapter 3 details the reason for choosing each of the joint specific questionnaires for use as an outcome measure in the study, and also discusses the reliability and validity of each of these instruments. However, there has been little previous work has been undertaken to assess the validity of the instruments from the patient's perspective. This chapter details the analysis undertaken on spontaneous annotations on the Oxford Hip Score (OHS) and Self-Report Harris Hip Score (HHS) in order to asses whether, from the patient's perspective, these instruments adequately measure their disability.

Methods

Each questionnaire returned was analysed for missing answers, multiple answers (i.e. where more than one answer is selected for any given question), modifications to the questionnaire (e.g. crossing out, circling, highlighting or underlining words) and annotations. The annotations (and modifications, where applicable) were grouped into thematic categories.

Results

Table A6.8 summarises information on the number of patients returning incomplete (with questions left unanswered) or modified questionnaires. The questionnaire was considered to be modified if the patient has selected multiple answers to a question, if there was an annotation clarifying their answer, or if the was a modification to the printed answer which changed either the meaning of the question or clarified their answer.

Table A6.8: Summary of number of patients not completing the instruments in full or without modification or annotation for each instrument

Instrument	Number of patients returning questionnaire	Number of patients omitting questions, providing multiple answers, modifying or annotating the questions.
Oxford Hip Score (pre-operative completion)	122	13 (10.7%)
Oxford Hip Score (post-operative completion)	93	15 (13.1%)
Self-Report Harris Hip Score (pre-operative completion)	122	23 (24.7%)
Self-Report Harris Hip Score (post-operative completion)	93	37 (39.8%)

The results of the analysis of the each instrument will now be discussed in detail before a general discussion.

The Oxford Hip Score

Tables A.69 and A6.10 provide a summary of the number of patients missing questions, providing a multiple response to a question, or modifying (e.g. deleting part of the answer) or annotating on the question for OHS pre- and post-operatively .

NB: the number in brackets in the missing questions and multiple response columns indicates the number of patients who provided further annotation explaining their choice. These patients are included in the total number of patients modifying the question in the fourth column.

Table A6.9: Summary of number of patients missing questions, providing multiple responses and modifying/annotations questions of the Oxford Hip Score pre-operatively

Question No.	Question missed	Multiple Response	Modification or annotations to questions
1	2	2 (1)	1
2	1	-	-
3	1	-	-
4	1	-	2
5	2 (1)	-	1
6	1	1	-
7	-	1	-
8	1 (1)	-	3
9	1	-	1
10	1	-	-
11	2 (1)	-	1
12	-	-	1

Table A6.10: Summary of number of patients missing questions, providing multiple responses and modifying/annotations questions of the Oxford Hip Score post-operatively.

Question No.	Question missed	Multiple Response	Modification or annotations to questions
1	-	-	4
2	-	-	3
3	1	-	5
4	1	-	3
5	2	-	2
6	-	-	4
7	1 (1)	1 (1)	4
8	-	-	5
9	-	-	1
10	-	-	3
11	1 (1)	-	3
12	-	-	3

Table A6.9 indicates that the question that the patients had most difficulty in answering pre-operatively was question 1 which relates to the pain that patients experience in their hip. Two patients failed to answer the question and a further two patients provided multiple responses to this question; only one of which annotated to justify their choice. Post-operatively, a greater number of annotations were made, with each question receiving at least one annotation. The annotations for each question have been grouped into categories and are summarised in Tables A6.11 (pre-operative) and A6.12 (post-operative).

Table A6.11: Annotations on pre-operative questionnaires

Question number	Annotation type (Number of questionnaires)	Number of questionnaires
1	Variability of pain (1)	1
2	No annotations	-
3	No annotations	-
4	Use of an aid (2)	2
5	Not applicable to patient (1)	1
6	No annotations	-
7	No annotations	-
8	Not applicable to patient (1), Clarification of type of pain (2)	3
9	Co-morbidity affecting walking (1)	1
10	No annotations	-
11	Not applicable to patient (1)	1
12	Clarification of type of pain (1)	1
Overall comment	Difficulty in fitting answers into choices (1)	1

Table A6.12: Annotations on post-operative questionnaires

Question number	Annotation type (Number of questionnaires)	Number of questionnaires
1	Variability of pain (1), discomfort rather than pain (2), co-morbidity contributing to pain (1)	4
2	Difficulty in drying foot (3)	3
3	Clarification of type of transport (car rather than public transport) (4), Stiffness (1)	5
4	Use of an aid (2), Clarification of clothing type (1)	3
5	Not applicable (1), Use of wheelchair (1)	2
6	Indication of no pain but unable to walk for 30 minutes (2), use of aid (1), co-morbidity inducing pain (1)	4
7	Not applicable (1), use of an aid (2), improvement over last 4 weeks (1)	4
8	Stiffness not pain (1), pain resultant from a co-morbidity (4)	5
9	Occurrence of limp (1)	1
10	Spasm rather than pain (1), co-morbidity affecting pain (1), unable to remember (1)	3
11	Not applicable (1), co-morbidity (1), situation in which pain occurs (1)	3
12	Co-morbidity (1), type of pain (1), unable to sleep on operated hip (1)	3
Overall comment	Situation where pain arises (1)	1

Discussion

The first section of the discussion will address problems relating to the individual questions, the second section discusses the limitations of the OHS highlighted in this study.

Question 1

Patients experienced difficulty in answering this question, which relates to pain experienced in the hip, both in the pre- and post-operative questionnaires. Annotations revealed that difficulty arose as patients viewed their pain as variable, co-morbidities could affect this pain, and post-operatively two patients only suffered "discomfort" and so were unsure within which category this would fall.

Question 2

Pre-operatively patients seemed to have little difficulty in answering this question which relates to trouble (as a result of the hip) in washing and drying yourself all over. Post-operatively three people annotated to explain that they had difficulty in drying their foot but otherwise were able to wash and dry adequately. Wylde et al. (2005) also reported similar problems with this question, in their examination of the OHS from the patients perspective. This problem relates to a restriction of range of motion and it may be that more patients also experienced this problem but did not annotate to say so. In the instance where one is able to satisfactorily (with little trouble) wash and dry with the exception of the foot, it would be difficult to know which category to place oneself in. As the question states wash and dry ***all over***, if a patient is unable to dry their foot should they place themselves in the 'impossible to do' category which does not accurately represent their ability, disregard the trouble drying the foot and select 'with very little trouble' which is likely to overstate the patients true ability, or select an option somewhere in the middle. Patients choosing to answer this question in a different way will introduce a bias which could be avoided by less ambiguity in the question.

Question 3

Post-operatively, there were five annotations on this question which relates to trouble (because of hip) experienced in getting in and out of a car or public transport. Four of the annotations related to fact that the patient was able to travel by car but not public transport. It seems that patients have assessed travelling by public transport as a more difficult task than travelling by car. This, which is again in agreement with Wylde et al's findings, raises the question whether these two different tasks should be considered within the same question. It is likely that Dawson et al. (1996a) in developing the OHS included the alternatives of car or public transport in the question so not to exclude patients who do not have access to a car from answering the question. However, if using transport is a more difficult task than getting in or out of a car for those who have recently had a total hip replacement, then instead by Dawson et al including this question, they are introducing bias into their questionnaire as people who travel only by public transport will score more highly (associated with a greater disability) than patients who have access to a car.

Question 4

This question, which relates to ability in putting on socks, stockings or tights, received annotations both pre- and post-operatively. Four of these annotations related to use of an aid in completing the task. The use of an aid undoubtedly makes the task easier to complete as the patient does not have to be able to flex the hip joint as far compared with when not using an aid. As many patients did not annotate on their questionnaire, it is unknown whether they have considered their ability in donning footwear with or without the use of aids, and so this introduces a confounding variable. This could be avoided by altering the question to ask about difficulty in completing the task unaided. Another patient annotated on the clothing type – it may be that they consider putting on one type of clothing more difficult than other.

Question 5

This question relates to ability in doing the household shopping. Two patients omitted this question pre-operatively, one of whom annotated to say that this question was not applicable to him as he lives in a residential home. A further two patients failed to answer this question post-

operatively, one of who indicated that this question was not applicable to him as his wife did the household shopping, although he thought he would be capable of completing the task if necessary. The fourth annotation highlights how, in some instances, the instrument fails to measure disability as a result of the hip. The patient selected choice A 'yes easily' and annotated with "provided I borrow a wheelchair from the store". Interestingly, before her surgery she had selected choice D 'with extreme difficulty'. Comparing her pre- and post- operative results, it would appear that the total hip replacement had been responsible for a great deal of improvement in her function (with respect to ability to do the household shopping) when in fact the improvement really related to the hiring of a wheelchair. Without hiring a wheelchair, I suspect that the patient would either have extreme difficulty or find it impossible to complete this task, as at 3-month she still need to use 2 crutches to be able to mobilise.

Question 6

The question asks the patient for how long they are able to walk before pain from the hip becomes severe. This question prompted four annotations post-operatively. One annotation related to use of an aid, and another to co-morbidity affecting walking ability. The other two annotations were both as a result of confusion of which answer to select. In both cases the patient experienced no pain on walking but was unable to walk for 30 minutes. This therefore left the patient unsure whether to select answer A 'no pain/more than 30 minutes' or another answer which reflected for how long they were capable of walking even though the time limit was related to a factor other than pain. McMurray et al. (1999) and Wylde et al. (2005) both found similar findings in relation to this question. McMurray et al comment that patients in their study had difficulty in comprehending "how having 'no pain' and being able to walk 'more than 30 minutes' could be presented as the same thing."

Question 7

This question relates to ability to climb stairs. Four annotations were recorded post-operatively. In one case the patient felt this question was not applicable as they had no stairs in the home. Another annotation related to improvement within the four week period which the question asks about. The other two responses related to use of an aid in completing a task. Again the

question does not stipulate whether the patient should answer when considering their ability with or without aid. These annotations could be avoided by having more clarity in the question.

Question 8

This question, which relates to pain resulting from standing up at a table after a meal, resulted in a number of annotations both pre- and post-operatively. Two pre-operative and one post-operative annotation related to the type of pain: stiffness or muscular. One patient pre-operatively noted that the question was not applicable; presumably he does not eat sitting at a table. Post-operatively, four patients commented that the pain was a result of co-morbidity e.g. a problem with their knee rather than as a result of their operated hip.

Question 9

This question relates to the presence of a limp when walking. One patient commented pre-operatively that their limp was in part the result of a co-morbidity. Post-operatively the annotation related to confusion of the answer B which states 'sometimes/just at first'. The patient had crossed through the sometimes to indicate that the limp was present just at first rather than later on in walking.

Question 10

This question relates to the number of days that the patient has experienced sudden severe pain in the hip. There were three annotations post-operatively: one patient was unable to remember if he had experienced any, another patient felt that the pain they were experiencing was due to a co-morbidity (lower back injury, and the third patient annotated the questionnaire to state that they had experienced spasms rather than shooting or stabbing pain.

Question 11

This question asks the patient whether pain from their hip has affected their ability to carry out their work or housework. One patient pre-operatively (lived in residential home) and one patient post-operatively (staying with daughter who was doing all the housework) felt that this question was not applicable to them. Post-operatively, one patient felt that co-morbidity hindered their

ability to work, whilst another patient described situations in which pain would develop but had found ways to avoid these.

Question 12

The final question relates to frequency of pain in hip when in bed. Two patients (one pre-operatively and one post-operatively) clarified the type of pain that they were experiencing. One patient commented on a co-morbidity which contributed to the pain. One patient commented that they were unable to sleep on the affected hip. This may have been as a result of pain but the patient does not comment on that.

Overall Questionnaire Analysis

The overall analysis revealed that the annotations fell within these categories: nature of pain, co-morbidities, variability of function, question not applicable to patient (i.e. no stairs), and ambiguity of question. The number of annotations in each category are summarised in Table A6.13.

Table A6.13: Categories of annotations

Annotation type	Number of annotations (pre-operative)	Number of annotations (post-operative)
Pain:		
Nature of	3	9
Variability	1	1
Co-morbidity	1	9
Variability of function	1	-
Question not applicable	3	3
Ambiguity of question	3	18

Ambiguity of Questions

21 annotations related to ambiguity in the questions. Patients had difficulty in answering questions 4, 5 and 7 as they were unsure whether they should be answered when considering their ability in completing the tasks with our without an aid. Use of an aid will make the task easier and therefore the question should be answered without the use of an aid. This problem could be avoided by stipulating "without aid" in the question.

Patients had difficulty in answering questions where they were asked about the completion, of what they deemed to be, two different tasks within a question. Examples of this are evident in patient's responses to question 3 relating to travel either by car or public transport and question 4 which questions about ability to put on socks, stockings or tights.

Similarly, patients experienced difficulty in answering questions where there was more than one concept provided within an answer. Examples of this are question 6 which asks about time walking before pain becomes severe where choice A is 'no pain/more than 30 minutes' and in question 9 which is interested in the limp when walking where choice B is 'sometimes/or just at first'. In both these instances patients felt that these alternatives did not equate to mean the same thing.

Patients also experienced trouble in questions where there was not sufficient information given for them to appropriately select their answer. This was highlighted with patient's annotations in response to question 2 which is concerned with washing and drying themselves all over. Patients were unsure how to categorise themselves if they were capable of washing most, but not all, of their body without difficulty.

Variability in Function and Pain

Patients sometimes experienced in difficulty in categorising themselves when their pain varied over time either in nature or severity. The same was true when patients function varied over time.

Co-morbidity

Ten annotations related to co-morbidity having a modulating effect on pain or functional ability. The OHS was designed to be joint-specific and not affected by patients other medical problems, so this finding is a major short-coming of the OHS.

Non-applicability of Questions

Six annotations related to the non-applicability of questions. These related to ability to climb stairs (where the patients had no stairs within their home), ability to do the household shopping (where the patient lived in a residential home, and where another member of the family was responsible for this task), ability to carry out work or housework (where the patient lived in a residential home or where another member of the family was responsible for the housework), and pain experienced when standing up from a table after a meal (presumably because the patient doesn't eat sitting at a table). A short-coming of the OHS (and many questionnaires) is that there is no option for stating that the question is not applicable to the patient. A forced response will create unreliable data.

The Harris Hip Score

Tables A6.14 and A6.15 provide a summary of the number of patients missing questions, providing a multiple response to a question, or modifying (e.g. deleting part of the answer) or annotating on the question for HHS pre- and post-operatively .

NB: the number in brackets in the missing questions and multiple response columns indicates the number of patients who provided further annotation explaining their choice. These patients are included in the total number of patients modifying the question in the fourth column.

Table 6.14: Summary of number of patients missing questions, providing multiple responses and modifying/annotations questions of the Self- report Harris Hip Score pre-operatively.

Question No.	Question missed	Multiple Response	Modification or annotations to questions
1	1	4 (1)	1
2	1	2 (1)	1
3	5 (2)	-	3
4	4 (1)	1 (1)	4
5	1	1	3
6	3 (1)	-	4
7	1	-	-

Table A6.15: Summary of number of patients missing questions, providing multiple responses and modifying/annotations questions of the Self- report Harris Hip Score post-operatively.

Question No.	Question missed	Multiple Response	Modification or annotations to questions
1	-	4 (3)	4
2	1 (1)	2 (1)	7
3	5 (3)	1 (1)	4
4	3 (1)	1 (1)	4
5	1 (1)	3	11
6	2 (1)	1 (1)	10
7	1	-	5

Tables A6.14 and A6.15 indicate that the patients had difficulty in answering a number of questions both pre- and post-operatively with several missed questions, multiple responses and annotations made. . The annotations for each question have been grouped into categories and are summarised in Tables A6.16 (pre-operative) and A6.17 (post-operative).

Table A6.16: Annotations on pre-operative questionnaires

Question number	Annotation type (Number of questionnaires)	Number of questionnaires
1	Limitation of function due to stiffness rather than pain (1)	1
2	Dependent on distance (1)	1
3	Due to co-morbidity (1), long walks not taken (1)	2
4	Clarification of distance within or between categories (3), Clarification o distance unaided and with aid (1)	3
5	Clarification of level of difficulty (1), use of an aid (1), Details of alternative method not described (1)	3
6	Dependent on whether socks or shoes (1), Difficulty in tying laces (2), Use of an aid (1)	4
7	No annotations	0
Overall comment	Comments on difficulty fitting answers within the choices (2)	2

Table A6.17: Annotations of post-operative questionnaires

Question number	Annotation type (Number of questionnaires)	Number of questionnaires
1	Origin of pain (co-morbidity) (2), variability of pain dependent on circumstances (2), type of pain (1)	5
2	Variability of aid depending on circumstances or environment (6), help from another person (1)	7
3	Long walks not taken (2), uncertain as to severity of limp (1), co-morbidity (1)	4
4	Distance greater than ¾ mile but not unlimited (3), between categories of distance (1)	4
5	Need to place both feet on each step but not considered as "severe trouble climbing stairs (4), use of banister rather than other aid (3), variability in method used (2), not applicable to patient as no stairs (2), co-morbidity preventing normal stair climbing (1)	12
6	Able for un-operated side (3), Unable to put on shoes/tie shoes (3), Use of an aid (3), Unable to put on socks (1)	10
7	High but no time limit (2), high chair and time limit (1), numbness (1), use of cushion (1)	5
Overall comment	Co-morbidities affecting answers provided (3), stiffness of joint (1)	4

Discussion

The first section of the discussion will address problems relating to the individual questions, the second section discusses the limitations of the HHS highlighted in this study.

Question 1

The multiple responses provided by patients to question 1 both pre- and post- operatively, may reflect the variability of pain experienced or that painkillers are required but then relieve the pain.

The annotations in combination with the multiple responses in the post-operative questionnaire reflect the variability of pain either over time or due to co-morbidity. One patient suffering from a degenerative spine ticked multiple responses to clarify what pain she thought was a result of her recently operated hip and what pain she thought resulted from the problems in her spine, although this must have been a difficult task to complete as the pain was localised to a similar area.

In each instance where a multiple response was given pre-operatively, answer D was always one of the options selected. Answer D refers to the use of "painkillers stronger than aspirin/similar medications". Whilst it is recognised that paracetamol (used in the UK in preference to aspirin) is the simplest and best medication for the treatment of osteoarthritis of the hip, a large number of patients will require stronger painkillers to adequately quell their pain but then after taking the painkillers, the resultant pain would fall into another category. However, this theory does not hold true for one of the participants who selected answers B and D but crossed out selected phrases so the answer D read "I'm active but have had to make modifications and/or give up some activities because of pain". In this instance, the patient felt that selection D was an appropriate as it mentioned limitation of function.

The double-barrelled nature of answer D is somewhat confusing. There are three separate elements within the response referring to moderate intensity of pain, stronger painkiller usage, and limitation of function. It is very possible that a patient may only be experiencing one or two

of the symptoms and therefore does not feel that the answer is fully applicable to them. In addition, as stated above, it is the first time that either stronger painkillers or limitation of function are mentioned, and so if either of these are applicable to the patient then they may feel that they have to tick answer D even if experiencing no pain, slight or mild pain (Answers A, B and C).

Question 2

Question two is interested in the amount and type of support used by patients. This response received multiple responses and annotations both pre- and post-operatively. All but one annotation related to the variability in aid dependent on environment, distance or how they were feeling that day ("and when I am tired"). One patient was provided with support when walking outside by her husband; she felt that this was not the same as option A (no support) but did not fit into any other category either. One patient crossed out the words "Zimmer frame" in answer F to indicate that they used two crutches.

Question 3

5 patients pre-operatively and 5 post-operatively failed to select an answer for this question which relates to the severity of the limp. Annotations and alterations to the question revealed that some patients did not answer this question as from the wording of the question they felt it not applicable to them. The question states that the limp "should be judged at the end of a long walk". 3 patients (1 pre-operatively and 2 post-operatively) have annotated that they did not take long walks and so have not answered the question. Patients missing this question for this reason could be easily avoided by a simple rewording of the question. Analysis revealed that difficulty in answering also arose when the patient had a co-morbidity that may be contributing to their limp.

Question 4

This question relates to the distance that the patient is able to walk. Distances were described in yards and miles based on the distance of a standard block. Problems arose for patients pre-operatively when they felt they fell between two categories or were at the bottom-end of one

category. One patient annotated to define the distances he was able to walk with and without aid despite the fact it is stated in the question the "this should be with the aid of a support". Post-operatively, confusion seemed to arise from category A "unlimited". Three patients annotated to say that they were capable of walking further than the distance stated in choice B but were not capable of walking unlimited distances.

Question 5

This question, which relates to climbing stairs, elicited the greatest number of modifications/annotations. There were several reasons for these modifications. Firstly, not all patients felt that this question was relevant to them as they lived in a dwelling with no stairs or had a stair lift fitted. Secondly, some patients had a co-morbidity which contributed to their difficulties in climbing stairs. Thirdly, some patients felt that the method they used to climb the stairs was variable and therefore no one response was adequate. The other two reasons both related to the wording of the answers B and C. Answer B states "needs a banister or cane or crutch". 3 patients post-operatively highlighted banister indicating that this was the method used rather than another aid. It maybe that these patients do not consider that use of a banister equates to the same level of disability as requiring a cane or a crutch especially if they required these aids pre-operatively and now don't post-operatively and regard this as an improvement in function. Answer C states "must put both feet on each step/severe trouble climbing stairs". One patient pre-operatively and four patients post-operatively have selected this answer have selected this answer but then crossed out the "severe trouble climbing stairs" indicating that they believe that leading with one foot does not equate to severe difficulty. Interestingly, the phrasing of these two answers had been substantially changed in the HHS from the original HHS. The choice of answers for B and C of the HHS are "normal using hand rail" or "in any manner". Harris (1969) does not state whether aids should be considered in any of the categories. It would be thought that aids would be included in the "normal using hand rail" category as if patients require a crutch to mobilise on flat surfaces then they will have it with them when climbing stairs. Mahomed et al. (2001), the developer of the HHS, may have included crutch or cane to clarify that that the use of an aid was acceptable but this may be better worded "need a banister with or without other aid". Why "any other manner" has been

substituted for "must put both feet on step/severe trouble climbing stairs" is unclear. The change may have been implemented to provide the patient with an example of method in this category but it is clear that the patients don't think that these two examples constitute the same thing.

Question 6

This question, relating to ability to don shoe and socks also prompted a number of modifications and annotations. One patient pre-operatively and three patients post-operatively annotated stating that they use one or more aids (sock slide, shoe horn) in completion of this task. The use of the aids then makes the task easy to complete (and so patients tick response A) but in these instances the question is no longer measuring limitation of motion/stiffness of hip joint. If the question stipulated without the use of aids then patients would be likely to score much lower on this question. One patient annotated that they would fall into category A (easy) with the use of aid and category C (impossible) without aids. A number of patients (2 pre-operatively and 5 post-operatively) indicated that they were capable of putting on their shoes but not capable of tying either due to limited range of motion/stiffness of the hip or due to an unrelated problem such as osteoarthritis of the hands. Post-operatively, these patients tended to select either answer A or B and provide a further annotation explaining this, possibly as they did not want to tick answer C (impossible) when they satisfied at least some of the task. Three patients post-operatively modified the question to state that they were capable for the un-operated leg only. Most of these issues arise from the ambiguity in the question. The question needs to state without the use of aids and for the operated leg. The question is worded practically identically to that in the original HHS, so this question may also be subject problems although if the question is surgeon-assessed, they will be able to take into these considerations in choosing the appropriate answer.

Question 7

Only one patient failed to answer question 7 pre-operatively. A telephone conversation with the patient revealed that this was due to accidentally missing the last page of the questionnaire

rather than being uncertain which answer to provide. Post-operatively patients seemed confused by the double-barrelled nature of answer B which describes either the need for a high chair or a time limit of sitting for ½ an hour. 3 patients required a high chair but not a time limit: 2 patients selected B but erased the time limit and one patient selected answer A and annotated with high chair. The questions have been adapted slightly from the original for which stated "comfortably in ordinary for chair one hour" and "on a high chair for one-half hour". However, there is still ambiguity in these responses as the time that the patient must be able to sit varies from one type of chair to another.

Overall Questionnaire Analysis

The overall analysis revealed that the annotations fell within these categories: nature of pain, co-morbidities, variability of function, question not applicable to patient (i.e. no stairs), and ambiguity of question. The number of annotations in each category are summarised in Table A6.18.

Table A6.18: Categories of annotations

Annotation type	Number of annotations (pre-operative)	Number of annotations (post-operative)
Nature of pain:		
Severity	3	1
Variability	1	-
Co-morbidity	1	7
Variability of function	2	9
Question not applicable	1	4
Ambiguity of question	13	30

Ambiguity of Questions

43 annotations related to ambiguity of questions. Patients experienced difficulty in answering questions 1, 5, 6 and 7 as the questions featured choices of response which contained multiple alternatives often which are describing a different construct. For example, an answer in question 1 is "slight or occasional pain"; this choice describes both severity and frequency of pain, which are clearly different.

Patients struggled with questions where they had to be able to satisfactorily complete more than one task to be able to select an answer. This is evident in question 6 where the questions asks about both socks AND shoes.

Patients were also unsure whether or not to include the use of aids when answering questions relating to function. Using an aid clearly makes the completion of a task easier and therefore gives falsely elevated results. Other patients may have answered the question considering with the use of an aid but not annotated to say this so producing a confounding variable.

Variability of Function and Pain

Due to nature OA and recovery following orthopaedic surgery, some days the patient is able (or feels more able) to carry out certain tasks. Likewise pain is variable in frequency of occurrence and severity. 11 annotations were the result of variability of function whilst 5 related to variability in pain. Most of these annotations could have been avoided by clarifying question with phrases like "most of the time" or "usually".

Co-morbidity

Eight annotations were the result of co-morbidities. Co-morbidities are relatively common in people of the age group likely to be undergoing total hip replacement. It is therefore unfortunate that, from the patient's perspective, co-morbidities may affect the outcome of this joint-specific questionnaire as this will be a confounding variable in any study conducted using this as the outcome measure.

Non-applicability of Questions

Only two annotations related to the non-applicability of questions; these were related to the use of the stairs. (Some patients had felt that the question on limp was irrelevant to them as they were unable to walk a long distance but this was deemed to be related to the ambiguity of the question rather than actually not applicable to the patient.) Whilst the number of annotations relating to non-applicability of questions is very small, it highlights a short-coming of the HHS in that patients can't be excluded from a question if it is not applicable. Forcing patients to fit into a category can be responsible for providing false responses.

Overall Discussion

Differences Pre- to Post-operatively

More modifications were made to both questionnaires post-operatively. This may be as patients had many questionnaires to complete (as part of the larger study) pre-operatively and so curbed their annotations. Alternatively, patients may have been keen to provide further evidence to show their improvement post-operatively especially if they fell into the same category for a given question.

Limitations of the Instruments

The analysis revealed that patients experienced similar problems with both instruments. Both instruments suffered from ambiguity in the questions and answers making it difficult for the patient to select the appropriate response. This was more marked in HHS. This may be the result of the fact that it was adapted to a self-report questionnaire from a surgeon-assessed questionnaire and some of the concepts have not been adequately described.

Patients found difficulty in sometimes selecting a single response for some questions due to the variability of pain and function. It is possible that this difficulty could be overcome by qualifying in the question with a phrase such as "the majority of the time".

Both questionnaires contained questions that some patients deemed not applicable to them. If patients are unable to provide a response as the question is irrelevant to them and there is no mechanism is the scoring system to account for this, then this poses a quandary of how to mark such a questionnaire. Wylde et al. (2005) provided a solution to this in considering the development of a new instrument:

> *An ideal would be to weight items of disability with the importance of performing the activity. This would allow non-applicable items to be rated as of no importance and thus not contribute to the score, producing a more individualised patient-centred outcome.*

It may be that these changes could be implemented in revised scoring systems of OHS and HHS in order to overcome these problems.

Patients felt that both questionnaires were not always joint-specific and that their co-morbidities sometimes affected their choice of answer. This will introduce a confounding variable into the analysis.

The limitations described for both OHS and HHS are similar to the limitations found by Wylde et al and McMurray et al. (1999) who both assessed that OHS from the patient's perspective, and Whitehouse et al. (2005) who assessed the Oxford Knee Score from the patient's perspective.

On the whole the OHS seemed to fair better than the HHS questionnaire with less missing answers, multiple response and annotations despite the instrument being of a greater length. As stated above this may be as the OHS was developed specifically as a self-report questionnaire whereas the HHS has been adapted for a surgeon-assessment measure.

Despite the limitations of these joint-specific instruments in measuring disability pre- and post-total hip arthroplasty, they are still useful tools in outcome measurement especially when enhanced with telephone follow-up (McGrory et al. 1997). As for the main study patients were contacted by telephone to clarify any missing, multiple or contradictory answers, hopefully the unreliability of the questionnaires has been minimised.

Limitations of Study

The analysis was limited to the spontaneous annotations made by patients on their questionnaires. This accounted for 13% of patients pre-operatively and 40% of patients post-operatively for HHS and 10% of patients pre-operatively and 13% of patients post-operatively for the OHS. Comment, therefore, can only be made on this subset of patients. The patients who did modify their questionnaires may have satisfied with the questionnaire or alternatively felt it did not adequately assess their disability but did not comment on this as they were not instructed to do so.

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Analysis of Joint Specific Questionnaires: The Patients' Perspective of the Oxford Knee Score and the patient assessed section of the Knee Society Knee Score

Chapter 3 details the reason for choosing each of the joint specific questionnaires for use as an outcome measure in the study, and also discusses the reliability and validity of each of these instruments. However, there has been little previous work has been undertaken to assess the validity of the instruments from the patient's perspective. This chapter details the analysis undertaken on spontaneous annotations on the Oxford Knee Score (OKS) and the Knee Society Knee Score functional component (KSKS) in order to asses whether, from the patient's perspective, these instruments adequately measure their disability.

Methods

Each questionnaire returned was analysed for missing answers, multiple answers (i.e. where more than one answer is selected for any given question), modifications to the questionnaire (e.g. crossing out, circling, highlighting or underlining words) and annotations. The annotations (and modifications, where applicable) were grouped into thematic categories.

Results

Table A6.19 summarises information on the number of patients returning incomplete (with questions left unanswered) or modified questionnaires. The questionnaire was considered to be modified if the patient has selected multiple answers to a question, if there was an annotation clarifying their answer, or if the was a modification to the printed answer which changed either the meaning of the question or clarified their answer.

Table A6.19: Summary of number of patients not completing the instruments in full or without modification or annotation for each instrument

Instrument	Number of patients returning questionnaire	Number of patients omitting questions, providing multiple answers, modifying or annotating the questions.
Oxford Knee Score (pre-operative completion)	74	14 (19%)
Oxford Knee Score (3-month post-operative completion)	56	16 (29%)
Oxford Knee Score (1-year post-operative completion)	17	8 (47%)
Knee Society Knee Score (pre-operative completion)	74	14 (19%)
Knee Society Knee Score (3-month post-operative completion)	56	17 (30%)
Knee Society Knee Score (1-year post-operative completion)	17	6 (35%)

The results of the analysis of the each instrument will now be discussed in detail before a general discussion.

The Oxford Knee Score

Tables A6.20, A6.21 and A6.22 provide a summary of the number of patients missing questions, providing a multiple response to a question, or modifying (e.g. deleting part of the answer) or annotating on the question for OHS pre-operatively, 3-months post-operatively and 1-year post-operatively .

NB: the number in brackets in the missing questions and multiple response columns indicates the number of patients who provided further annotation explaining their choice. These patients are included in the total number of patients modifying the question in the fourth column.

Table A6.20: Summary of number of patients missing questions, providing multiple responses and modifying/annotations questions of the Oxford Knee Score pre-operatively

Question No.	Question missed	Multiple Response	Modification or annotations to questions
1	2	-	-
2	2	-	-
3	1	-	1
4	1	2 (1)	2
5	1	-	-
6	1	-	-
7	2	-	-
8	1	-	1
9	4	-	-
10	3	-	-
11	3	-	-
12	3	-	2

Table A6.21: Summary of number of patients missing questions, providing multiple responses and modifying/annotations questions of the Oxford Knee Score 3-months post-operatively

Question No.	Question missed	Multiple Response	Modification or annotations to questions
1	-	-	2
2	-	-	-
3	2	-	4
4	2	1	2
5	1	-	1
6	-	-	1
7	5 (5)	-	6
8	-	-	1
9	-	-	-
10	-	-	2
11	-	-	2
12	1 (1)	-	2

Table A6.22: Summary of number of patients missing questions, providing multiple responses and modifying/annotations questions of the Oxford Knee Score 1-year post-operatively

Question No.	Question missed	Multiple Response	Modification or annotations to questions
1	-	-	-
2	-	-	-
3	1	-	3
4	1	-	-
5	1	-	-
6	-	-	3
7	1 (1)	-	3
8	-	-	-
9	-	-	1
10	-	-	3
11	-	-	-
12	-	-	1

Table A.620 indicates that each question was omitted by at least one patient. The missing answers documented in this table are the result of 10 patients missing questions. In 8 of these cases this was due to accidentally missing a page of questionnaire. Only two patients provided multiple responses – these were both in response in question 4 which relates to walking time. The question concerned with kneeling caused the most the problems at 3-months post-operatively. All bar two items (2 and 9) received annotations or modifications. The annotations for each question have been grouped into categories and are summarised in Tables A6.23 (pre-operative) and A6.24 (3-months post-operative) and A6.25 (1 year post-operative).

Table A6.23: Annotations on pre-operative questionnaires

Question number	Annotation type (Number of questionnaires)	Number of questionnaires
1	No annotations	-
2	No annotations	-
3	Car rather than public transport (1)	1
4	Can walk for more than 30 minutes but some pain (1), unable to walk but not due to pain (1)	2
5	No annotations	-
6	No annotations	-
7	No annotations	-
8	Use a pillow to wedge leg (1)	1
9	No annotations	-
10	Rarely but not never (1), use of aid (1)	2
11	No annotations	-
12	Have stair lift (1), come down stairs backwards (1)	2
Overall comment	-	-

Table A6.24: Annotations on 3-month post-operative questionnaires

Question number	Annotation type (Number of questionnaires)	Number of questionnaires
1	Discomfort (1), stiffness (1)	2
2	No annotations	-
3	Frequency (1), car rather than public transport (1), position in car (1)	3
4	No pain but unable to walk for 30 minutes (1)	1
5	Discomfort (1)	1
6	Rarely rather than never	1
7	Co-morbidity (1), kneeling not allowed (5)	6
8	Ache rather than pain (1)	1
9	No annotations	-
10	Never rather than rarely (2)	2
11	Co-morbidity (2)	2
12	Not applicable (1), method of coming down stairs (1)	2
Overall comment	Discomfort rather than pain (1)	1

Table A6.25: Annotations on 1-year post-operative questionnaires

Question number	Annotation type (Number of questionnaires)	Number of questionnaires
1	No annotations	-
2	No annotations	-
3	Car rather than public transport (1)	1
4	No pain but unable to walk for 30 minutes (3)	3
5	No annotations	-
6	No annotations	-
7	Co-morbidity (1), kneeling not allowed (2)	3
8	No annotations	-
9	Co-morbidity (1)	1
10	Never rather than rarely (3)	3
11	No annotations	1
12	Not applicable (1)	1
Overall comment		-

Discussion

The first section of the discussion will address problems relating to the individual questions, the second section discusses the limitations of the OKS highlighted in this study.

Question 3

This question, which is concerned with ability to get in or out of transport, received annotations and modifications on the pre-operative, 3-month, and 1-year post-operative questionnaires. Three of these annotations related to the fact that the patient is able to get in and out of a car but not able to get on or off public transport. This is in agreement with the findings of the analysis on the Oxford Hip Score (OHS) (see previous chapter). As stated in the previous chapter, when the item was developed it is possible that Dawson et al. (1998) included the

option of car ***or*** public transport within the question in order to make this item applicable to patients who did not have access to a car. However, as patients evaluate the task as using public transport as more difficult than getting in or out of a car, by including this option a bias is actually introduced as patients who only have access to public transport will score higher (equating to more disability) than patients who have access to a car. Another patient commented that the position in the car (front seat rather than back seat) even made a difference as to whether they were able to get in or out of the vehicle.

Question 4

This item relates to walking time and received annotations and modifications at all three data collection points. Two patients provided multiple responses to this question pre-operatively. One patient selected answers C and D to indicate that they were capable of walking for 5 to 15 minutes but in the house only, and one patient selected answers D and E but had crossed through the "severe on walking" in answer E. This was interpreted as unable to walk but not due to pain.

Most annotations and modifications related to confusion over answer A (No pain/more than 30 minutes). Pre-operatively one patient crossed out "no pain" to indicate that they were capable of walking for more than 30 minutes but experienced some pain on doing so. Presumably the pain was not severe otherwise they would have selected an alternative answer. Post-operatively, four patients crossed out the "more than 30 minutes" to indicate that they experienced no pain on walking but were unable to walk for 30 minutes. This finding replicates that found by Whitehouse et al. (2005) in their examination of problems with the OKS. This problem has also been reported on the corresponding item of the OHS using data from this study (see previous chapter) and in studies conducted by Wylde et al. (2005), and McMurray et al. (1999). Patients do not equate "no pain" with "more than 30 minutes". This problem could be overcome by a rewording of the answer so that it only describes one construct instead of two.

Question 7

This item asks the patient how much difficulty they experienced in kneeling. Five patients failed to answer this question 3-month post-operatively and annotated to indicate that kneeling was not advised by their surgeon. Overall 30 patients (54%) either did not select an answer for this item or selected "no impossible" the highest scoring response. This percentage is much greater than would be expected given the patients' choices of answer selection for the other items in the questionnaire and suggests that some may have ticked this response as they had never tried or been advised not to kneel. This item on the questionnaire is a major shortcoming of the instrument. Whitehouse et al. (2005) reported similar findings and suggested that the with the current scoring system, patients who are following their surgeon's advice and not kneeling following their arthroplasty surgery are unable to score the perfect overall score of 12. This question is therefore responsible for falsely elevating patient's scores. Whitehouse et al. (2005) went on to comment that there should be a not-applicable option for patients who had not kneeled as instructed by their surgeon could exclude themselves from this question without affecting their overall score. This would be a good solution and would also enable patients who are unable to kneel due to a co-morbidity to exclude themselves from the question. However, Dawson et al. (2006) seemed unwilling to take on board this criticism and are unlikely to adapt the OKS as a result. They commented that the surgeons in Oxford (and other cited references) see no reason why a patient should not be allowed to kneel following their surgery. As such they do not feel that the questionnaire needs to be altered. Whether or not there is evidence to suggest that a patient can kneel on their prosthesis is not the issue. As many surgeons choose to (rightly or wrongly) advise against kneeling, leaving the instrument as it currently stands penalises patients who follow the advice of their surgeon and misreports their disability as being higher than it really is.

Overall questionnaire analysis

The overall analysis revealed that the annotations fell within these categories: non-applicability of questions (including the question related to kneeling), severity of pain, the effect of co-

morbidity on function, and question clarity. The number of annotations in each category are summarised in Table A6.26

Table A6.26: Categories of annotations

Annotation type	Number of annotations (pre-operative)	Number of annotations (post-operative)	Number of annotations (post-operative)	Total
Severity of pain	-	4	-	4
Co-morbidity	-	3	2	5
Non-applicability of question	1	6	3	10
Ambiguity in questions/answers	7	7	8	22

Severity of Pain

Four annotations were made post-operatively that related to the severity of pain. One patient commented that they felt a discomfort that they rated as less than "mild pain" but more than "no pain" leaving them unsure which box to select.

Co-morbidity

Patients reported that co-morbidity (both psychological and physical) affected their ability to use public transport, walk, kneel, work and do the household shopping. It also affected their experience of pain. This finding has been replicated with the OHS (see previous chapter). The effect of general co-morbidity has been previously reported by Whitehouse et al. (2005) and Harcourt et al. (2001) reported that disease of the hip or lumbar spine affects the overall score on the OKS. Dawson et al. (2006), in response to Whitehouse et al.'s (2005) criticisms regarding the effect of co-morbidity on the OKS, suggest this problem could be limited by first administering a global health questionnaire which would allow the patient to register their overall health concerns and then would be better focussed on their disability as a result of their knee in the OKS. However, the usefulness of this would be limited. If a patient is unable to ascend the

stairs due to co-morbidity, then they are not going to be able to state how difficult climbing the stairs would be as a result of their knee. In these instances the questionnaire would greatly benefit from a not-applicable option (see below).

Non-applicability of Questions

As discussed above, some patients felt that the question relating to kneeling was not applicable to them as they had been advised by their surgeon not to kneel. In addition, some patients reported that the item regarding ability to walk up and downstairs was not applicable to them as they had a stair lift fitted or lived in a bungalow. In instances where the patient does not feel that the question is relevant to them, the questionnaire would greatly benefit from a not-applicable option. Wylde et al. (2005) offered the solution of for each item allowing the patient to rate how important that task is and items that were deemed as unimportant would not affect the overall score of the instrument.

Ambiguity in Questions and Answers

The greatest number of annotations and modifications resulted from ambiguity in the question or choice of answer. This occurred in questions where the patient was unsure whether to consider their answer with a use of an aid (similar finding were reported for the OHS). Use of an aid will make completion of a task easier and therefore the instrument should record the level of difficulty that the patients experienced without the use of the aid. The questions could be modified to state this.

Patients experienced difficulty in answering the item related to transport use, as the question asked about two different tasks (car or public transport) within the one question. Patients do not feel that the level of difficulty in completing these tasks is the same.

Similarly, patients experienced difficulty in answering questions where there was more than one concept provided within an answer. This is evident in the items concerned with walking time (no pain/more than 30 minutes), limp (rarely/never; sometimes or just at first), and instability of the

knee (rarely/never; sometimes or just at first). In these instances patients felt that these alternatives did not equate to mean the same thing.

The Knee Society Knee Score

Tables A6.27, A6.28 and A6.29 provide a summary of the number of patients missing questions, providing a multiple response to a question, or modifying (e.g. deleting part of the answer) or annotating on the question for KSKS pre-operatively, 3-months post-operatively and 1-year post-operatively .

NB: the number in brackets in the missing questions and multiple response columns indicates the number of patients who provided further annotation explaining their choice. These patients are included in the total number of patients modifying the question in the fourth column.

Table A6.27: Summary of number of patients missing questions, providing multiple responses and modifying/annotations questions of the Knee Society Knee Score pre-operatively

Question No.	Question missed	Multiple Response	Modification or annotations to questions
1	2	-	-
2	2	-	-
3	2	1	-
4	1	-	1
5	1 (1)	6	3
6	1 (1)	6	3
7	-	1	1
8	1 (1)	-	1

Table A6.28: Summary of number of patients missing questions, providing multiple responses and modifying/annotations questions of the Knee Society Knee Score 3-month post-operatively

Question No.	Question missed	Multiple Response	Modification or annotations to questions
1	1	-	1
2	2 (1)	-	1
3	1	-	1
4	2 (1)	-	3
5	1	4	2
6	1	4 (1)	4
7	-	1	-
8	1	-	4

Table A6.29: Summary of number of patients missing questions, providing multiple responses and modifying/annotations questions of the Knee Society Knee Score 1-year post-operatively

Question No.	Question missed	Multiple Response	Modification or annotations to questions
1	-	-	1
2	1 (1)	-	1
3	-	-	-
4	-	-	2
5	2 (2)	-	3
6	2 (2)	-	3
7	-	-	-
8	-	-	1

Table A6.29 indicates that all data collection points the patients experienced most difficulty in answering items five and six which are concerned with method of ascending and descending a flight of stairs. Both these items were subject to missing answers, multiple responses and annotations. All items on the questionnaire received at least one annotation. The annotations for each question have been grouped into categories and are summarised in Tables A6.30 (pre-operative) and A6.31 (3-months post-operative) and A6.32 (1 year post-operative).

Table A6.30: Annotations on pre-operative questionnaires

Question number	Annotation type (Number of questionnaires)	Number of questionnaires
1	No annotations	-
2	No annotations	-
3	No annotations	-
4	Medication (1)	1
5	Not applicable (2), method used (1)	3
6	Not applicable (1), method used (2)	3
7	Raised chair (1)	1
8	Help from another person (1)	1
Overall comment	-	-

Table A6.31: Annotations on 3-month post-operative questionnaires

Question number	Annotation type (Number of questionnaires)	Number of questionnaires
1	Frequency (1)	1
2	Not applicable (1)	1
3	Discomfort rather than pain (1)	1
4	Co-morbidity (1), unsure of distance (1), proof of distance walked (1)	3
5	Not applicable (1), use of an aid (1)	2
6	Not applicable (1), use of an aid (1), variability in method (1), method (1)	4
7	No annotations	-
8	Co-morbidity (1), variability (2), number of crutches (1)	4
Overall comment	Discomfort rather than pain (1), Co-morbidity (1)	2

Table A6.32: Annotations on 1-year post-operative questionnaires

Question number	Annotation type (Number of questionnaires)	Number of questionnaires
1	Part of body (1)	1
2	Not applicable (1)	1
3	No annotations	-
4	Co-morbidity (1), Use of aid (1)	2
5	Not applicable (2), use of hand rail (1)	3
6	Not applicable (2), use of hand rail (1)	3
7	No annotations	-
8	Variability (1)	1
Overall comment	Co-morbidity (2)	2

Discussion

The first section of the discussion will address problems relating to the individual questions, the second section discusses the limitations of the KSKS highlighted in this study.

Items 5 and 6: Ascending and Descending Stairs

Both these items which are concerned with the method that the patient uses to climb and descend stairs were a source of confusion to the patients filling out the questionnaire with several multiple responses, missed answers and annotations. Patients tended to select or annotate the same thing for each of these questionnaires. Pre-operatively, six patients provided a multiple response to this question, 1 patient did not select a box but annotated a response and a further two patients annotated on these questions. At 3-months post-operatively, one patient failed to provide a response for either of these items, four patients selected multiple responses for each item, an additional 2 patients annotated on item 5 (ascending stairs) and 4

patients annotated on item 6 (descending stairs). In the initial 1 year follow-up questionnaires received two patients failed to select an option but instead annotated a response on both of these questions and one more patient provided additional comments on these questions. Patients frequently tick option A ("I go downstairs normally one foot in front of the other") in addition to either answer B ("I use the hand rail for balance") or C ("I use the hand rail to support myself"). In one case a patient selected all three! This may arise from confusion of what constitutes "normally". Many people without any mobility disability will use the hand rail routinely when ascending or descending the stairs, especially in the age category of patients who undergoing TKA. One patient had ticked response A for both items but then annotated "using hand rail". This indicates that this is what she believes to be the "normal" method for climbing or descending stairs. The question does not allow for different methods that people may use to climb or descend the stairs. One gentleman was only able to come down the stairs backwards as so was unsure which category to place himself in. Another gentleman effectively crawled up and down the stairs using his hands on the stairs, but this in his opinion did not constitute not being able to use the stairs. One patient struggled in answering this question as the method that they used varied. Another patient commented that they must use an aid (e.g. cane) when walking on the stairs. Lack of answer selection arose when the patient felt that the question was not applicable to them for example if they lived in a bungalow or had a stair lift.

Overall Questionnaire Analysis

The overall analysis revealed that the annotations fell within these categories: pain, variability in function, the effect of co-morbidities on function, non-applicability of questions and ambiguity in the questions and answers. The number of annotations in each category are summarised in Table A6.33.

Table A6.33: Categories of annotations

Annotation type	Number of annotations (pre-operative)	Number of annotations (post-operative)	Number of annotations (post-operative)	Total
Pain				
- Frequency	1	-	-	1
- Severity	2	-	-	2
Variability in function	-	4	2	6
Co-morbidity	-	3	3	6
Non-applicability of question	3	3	5	11
Ambiguity of question/answer	6	4	3	13

Pain

Overall 3 annotations were recorded on pain. These annotations clarified the frequency or the severity of the pain

Variability in function

Some patients experienced difficulty in selecting an answer if their function varied over time or in different circumstances. This was evident in the questions relating to stairs (items 5 and 6) and also the item relating to use of an aid. Variability in function is to be expected in a chronic condition such as osteoarthritis and when recovering from arthroplasty surgery. Similar problems have been found in the OKS (see above), HHS and OHS (see previous chapter). These annotations could be avoided by clarifying the question with a phrase such as "the majority of the time".

Co-morbidity

Patients reported that co-morbidity affected their responses to some questions. The KSKS was developed in separate components allowing the clinical rating system to be judged without the affect of co-morbidities. Co-morbidities obviously affect the overall score on the functional component. However, success of a joint should not only be judged in terms of reduction in pain and improvement in range of motion, but also improvement of function. If the functional score is clouded by the effect of co-morbidities then this makes this difficult. This is a problem with joint-specific questionnaires in general and has been reported with the Oxford Knee Score and Oxford Hip Score. The development of an instrument (or update of a scoring system) which took in to consideration the effect of co-morbidities would enable a better comparison between patients on clinical trials.

Non-applicability of Questions

Some patients commented that items 2 (pain experienced in walking on stairs), 5 and 6 (method used in climbing descending stairs) were not applicable to them. As discussed above in relation to OKS, in dealing with this issue, the instrument would greatly benefit from an extra option of not-applicable.

Ambiguity of Questions and Answers

Overall 13 annotations resulted from either ambiguous questions and answers or answers which were too restrictive to adequately describe the patient's disability.

Confusion over the appropriate response arose where the patient was uncertain whether they should respond to the answer when considering the ability to carry out the task with or without the use of an aid. Annotations on the use of aid were left on items 4 (walking distance), 5 and 6 (ascending descending stairs), and 7 (method in getting in and out of chair). Similarly one patient clarified that their reported function was after taking medication The problem of lack of clarity relating to use of an aid has also been reported in the OHS by McMurray et al. (1999) and in the OKS by Whitehouse et al. (2005). This problem could be avoided by clarifying the situation within the question.

Annotations also related to the method that an individual used to complete a task where the choice of answers did not adequately describe their method. This has been discussed above in relation to items 5 and 6.

Overall Discussion

Limitations of the Instruments

Both questionnaires contained at least one question which was deemed as problematic (kneeling item in OKS and items relating to method used in ascending descending stairs in KSKS) which may reduce the reliability of the overall scores. In addition, both questionnaires suffered from ambiguity in the questions and answers, which could be improved with rewording, but currently may also affect the reliability of the overall scores recorded.

Both questionnaires suffered from the problem of the effect of co-morbidity. This problem has been seen with many joint-specific questionnaires and a new method scoring or design needs to be developed to ensure that the questionnaires are measuring disability as a result of the joint rather than overall health problems.

Both questionnaires contained questions that some patients felt were irrelevant to them (and their circumstances). Neither questionnaire currently has a method of scoring for questions which are deemed non-applicable, so in both cases the patient may deemed to be more disabled than they really are.

Limitations of Study

The analysis was limited to the spontaneous annotations made by patients on their questionnaires. Comment, therefore, can only be made on this subset of patients. The patients who did modify their questionnaires may have satisfied with the questionnaire or alternatively felt it did not adequately assess their disability but did not comment on this as they were not instructed to do so.

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Appendix 7

Analysis

Z-scores for Variables in the Hip Study

Table A7.1: Z scores for demographic factors:

Scale	Skewness			Kurtosis		
	Statistic	Standard Error	Z score	Statistic	Standard Error	Z score
Age	-.355	.236	-1.504	.413	.467	.884
Gender	-.414	.236	-1.754	-1.864	.467	**-3.991**
Employment status	-1.407	.236	**-5.961**	.149	.467	.319
Number of people in household	1.091	.236	**4.623**	1.436	.467	**3.075**
Highest education level achieved	.386	.236	1.635	-1.655	.467	**-3.543**
Social class	.072	.236	.305	-.901	.467	-1.929

Table A7.2: Z scores for Multi-dimensional health locus of control questionnaires

Scale	Skewness			Kurtosis		
	Statistic	Standard Error	Z score	Statistic	Standard Error	Z score
Internal	-.282	.237	-1.190	-.763	.469	-1.627
Chance	.561	.237	2.367	-.269	.469	-.574
Doctors	-.628	.237	-2.650	.337	.469	.719
Others	-.484	.237	-2.042	-.109	.469	-.0232

Table A7.3: Z scores for NEO- Five Factor Inventory

Scale	Skewness			Kurtosis		
	Statistic	Std Error	Z score	Statistic	Std Error	Z score
Neuroticism	.630	.236	2.669	.942	.467	2.017
Extraversion	.067	.236	.284	.631	.467	1.351
Openness to Experience	.500	.236	2.119	.374	.467	.801
Agreeableness	-.357	.236	-1.513	-.207	.467	.443
Conscientiousness	.054	.236	.229	-.390	.467	-.835

Table A7.4: Z scores for Coping Strategies Questionnaire (where possible data was taken from time point 2. If no data available here then was recorded from time point 1. Z scores which are unacceptably high (therefore showing non-normal distribution of data) are in bold.

Scale	Skewness			Kurtosis		
	Statistic	Std Error	Z score	Statistic	Std Error	Z score
Diverting Attention	.247	.238	1.038	-.179	.472	-.0379
Reintrerpreting Pain Sensations	1.101	.237	**4.646**	1.224	.469	2.610
Coping Self Statements	-.667	.237	-2.814	.277	.469	.591
Ignoring Sensations	.105	.237	.443	-.705	.469	-1.503
Praying/Hoping	.128	.239	0.536	-.418	.474	-.882
Catastrophizing	.897	.237	**3.785**	.023	.469	.049
Increase Behavioural Activities	-.225	.237	-.0949	-.343	.469	-.731
Controlling Pain	-.508	.237	-2.143	.355	.469	.757
Decreasing Pain	-.789	.237	**-3.329**	1.215	.469	2.591

Table A7.5: Z scores for pre-operative hip function

Scale	Skewness			Kurtosis		
	Statistic	Std Error	Z score	Statistic	Std Error	Z score
Pre-op ROM from HHS	-.881	.245	**-3.596**	.642	.485	1.328
Pre-op all round ROM	.078	.246	.317	-.102	.488	-.209
Pre-op Flexion range	-.227	.245	-.927	.527	.485	1.087
Pre-op ROM score just flexion	-1.042	.245	**-4.253**	1.503	.485	**3.099**
Pre-op HHS Score	.559	.236	2.369	.224	.467	.480
Pre-op HHS pain component	1.279	.236	**5.419**	2.353	.467	**5.039**
Pre-op HHS functional component	.196	.236	.830	.310	.467	.664
Pre-op HHS shoes question	-.107	.237	-.0451	.133	.469	.283
Pre-op OHS score	-.273	.236	-1.157	.099	.467	.212
Pre-op OHS pain component type 1	-.622	.236	2.635	.543	.467	1.163
Pre-op OHS function component type 1	.659	.236	2.792	1.604	.467	**3.434**
Pre-op OHS pain component type 2	-.890	.236	**-.3771**	.551	.467	1.179
Pre-op OHS function component type 2	-.171	.236	-.0724	.054	.467	.116
Pre-op OHS socks question	-.526	.237	-2.219	-.041	.469	-.087

Table A7.6: Z scores for medical factors

Scale	Skewness			Kurtosis		
	Statistic	Standard Error	Z score	Statistic	Standard Error	Z score
Hospital	1.429	.237	**6.029**	.190	.469	.405
Joint listed for	-.655	.240	-2.729	-1.603	.476	**3.367**
Category of co-morbidities	1.800	.237	**7.595**	2.094	.469	4.465
Referral to medic	2.984	.237	**12.591**	7.041	.469	**15.013**
Number of previous THA	2.079	.239	**8.698**	3.964	.474	**8.363**
Post-op complications	4.896	.236	**20.746**	22.399	.467	**47.964**

Table A7.7: Z scores for physiotherapy key milestones

Scale	Skewness			Kurtosis		
	Statistic	Standard Error	Z score	Statistic	Standard Error	Z score
Bed transfer	2.045	.250	**8.18**	6.010	.495	**12.141**
Chair transfer	2.202	.247	**8.915**	7.239	.490	**14.773**
Frame	1.045	.239	**4.372**	1.706	.474	**3.599**
Crutches	1.896	.239	**7.933**	4.709	.474	**9.935**
Physiotherapy sessions	.748	.239	**3.130**	.755	.474	1.593
Deemed ready for discharge by phsio	1.909	.239	**7.987**	5.703	.474	**12.032**
Length of stay	1.584	.239	**6.628**	3.551	.474	**7.492**

Table A7.8: Z scores for post-operative hip function

Scale	Skewness			Kurtosis		
	Statistic	Std Error	Z score	Statistic	Std Error	Z score
ROM from HHS	-1.148	.291	**-3.945**	.520	.574	.906
All round ROM	-.165	.289	-.0571	-.586	.570	-1.028
Flexion range	.317	.289	1.097	-.250	.570	-.438
ROM score just flexion	.317	.289	1.097	4.628	.570	**8.119**
HHS Score	-1.088	.257	**-4.233**	.566	.508	1.114
HHS pain component	-.1391	.257	**5.412**	.855	.508	1.683
HHS functional component	-.120	.257	-.467	-.875	.508	-1.722
HHS shoes question	-.215	.257	-.837	-.942	.508	-1.854
OHS score	1.068	.257	**4.155**	.402	.508	.791
OHS pain component type 1	.999	.257	**3.887**	.156	.508	.307
OHS function component type 1	.903	.257	**3.514**	.336	.508	.661
OHS pain component type 2	1.299	.257	**5.054**	1.015	.508	1.998
OHS function component type 2	.923	.257	**3.591**	-.003	.508	-.006
OHS socks question	.830	.260	**3.192**	.229	.514	.445

Transformations Used in Normalising Data in Hip Study

Table A7.9: Transformations used in normalising data

Variable	Transformation
Number of people in household	√ (x + 1)
Reinterpreting pain sensations (CSQ)	√ (x + 1)
Catastrophizing (CSQ)	√ (x + 1)
Decreasing pain (CSQ)	Score reversed, √ (x + 1), scores reversed
Pre-op ROM score from HHS	Score reversed, √ (x + 1), scores reversed
Pre-op ROM score just flexion	Score reversed, √ (x + 1), scores reversed
Pre-op HHS pain component	√ x
Pre-op OHS pain component type 2	Score reversed, √ (x + 1), scores reversed
No. of days to independently bed transfer	Log
No. of days to independently chair transfer	Log
No. of days to independently use frame	Log
No. of days to independently use crutches	Log
Number of days till physiotherapy discharge	Log
Post-operative length of Stay	Log
Post-op ROM score from HHS	Score reversed, √ (x + 1), scores reversed
Post-op HHS score	Score reversed, √ (x + 1), scores reversed
Post-op HHS pain component	Score reversed, √ (x + 1), scores reversed
Post-op OHS score	√ x
Post-op OHS pain component type 1	√ x
Post-op OHS function component type 1	√ x
Post-op OHS pain component type 2	Log
Post-op OHS function component type 2	√ x
Post-op OHS socks question	√ x

Z-scores for Transformed Variables in the Hip Study

Table A7.10: Z-scores of transformed data

Variable	Skewness			Kurtosis		
	Statistic	Standard Error	Z score	Statistic	Standard Error	Z score
Number of people in household	.482	.236	2.040	-.005	.467	-.010
Reinterpreting pain sensations (CSQ)	.286	.237	1.206	-.285	.469	-1.816
Catastrophizing (CSQ)	.215	.237	.0907	-.932	.469	-.1.987
Decreasing pain (CSQ)	.032	.237	-.0127	.974	.469	2.077
Pre-op ROM score from HHS	.075	.245	-.306	-.258	.485	-.532
Pre-op ROM score just flexion	-.115	.245	-.0469	-.084	.485	-.173
Pre-op HHS pain component	.652	.236	2.627	.412	.467	.882
Pre-op OHS pain component type 2	-.209	.236	-.886	-.597	.467	-1.278
No. of days to independently bed transfer	.666	.250	2.664	.637	.495	1.287
No. of days to independently chair transfer	.366	.247	1.482	1.347	.490	2.748
No. of days to independently use frame	-.287	.239	1.201	1.250	.474	2.637

Table A7.10 Continued: Z-scores of transformed data

Variable	Skewness			Kurtosis		
	Statistic	Standard Error	Z-score	Statistic	Standard Error	Z-score
No. of days to independently use crutches	.492	.239	2.059	.526	.474	1.110
Number of days till physiotherapy discharge	.549	.239	2.230	.571	.474	1.205
Post-operative length of Stay	.447	.239	1.870	.243	.474	.513
Post-op ROM score from HHS	.582	.291	-2.000	-.306	.574	-.533
Post-op HHS score	-.216	.257	-1.016	-.099	.508	-.195
Post-op HHS pain component	-.804	.257	**-3.128**	-.508	.508	-1.000
Post-op OHS score	.775	.257	**3.015**	-.241	.508	.0474
Post-op OHS pain component type 1	.699	.257	2.720	-.460	.508	-.787
Post-op OHS function component type 1	.522	.257	2.031	-.268	.508	-.528
Post-op OHS pain component type 2	.618	.257	2.031	-.673	.508	-1.325
Post-op OHS function component type 2	.652	.257	2.537	-.488	.508	-.960
Post-op OHS socks question	.420	.260	1.615	-.702	.514	-1.366

Z-scores for Variables in the Knee Study

Table A7.11: Z scores for demographic factors

Scale	Skewness			Kurtosis		
	Statistic	Standard Error	Z score	Statistic	Standard Error	Z score
Age	-.509	.287	-1.774	.787	.566	1.390
Gender	-.058	.287	-.202	-2.056	.566	**-3.622**
Employment status	-1.847	.287	**-6.436**	1.618	.566	2.859
Number of people in household	.406	.287	1.415	-.124	.566	-.0211
Highest education level achieved	1.410	.287	**4.913**	1.839	.566	**3.249**
Age left school	.796	.289	2.754	1.839	.570	**3.226**
Social class	-.199	.295	-.674	-1.000	.582	-1.718
Category of help	.705	.287	2.456	1.101	.570	1.932

Table A7.12: Z scores for Multi-dimensional health locus of control questionnaires

Scale	Skewness			Kurtosis		
	Statistic	Standard Error	Z score	Statistic	Standard Error	Z score
Internal	-.177	.287	-.617	-.614	.566	-1.085
Chance	.733	.287	2.554	-.533	.566	-.0942
Doctors	-1.039	.287	-.3620	.967	.566	1.708
Others	-.597	.287	-2.080	-.097	.566	-1.714

Table A7.13: Z scores for NEO- Five Factor Inventory

Scale	Skewness			Kurtosis		
	Statistic	Std Error	Z score	Statistic	Std Error	Z score
Neuroticism	.244	.287	.850	-.191	.566	-.337
Extraversion	-.117	.287	-.408	-.203	.566	.359
Openness to Experience	.106	.289	.367	.330	.570	.579
Agreeableness	-.475	.289	-1.643	.099	.570	.0174
Conscientiousness	.117	.287	.0408	-.070	.566	-.0124

Table A7.14: Z scores for Coping Strategies Questionnaire (where possible data was taken from time point 2. If no data available here then was recorded from time point 1. Z scores which are unacceptably high (therefore showing non-normal distribution of data) are in bold.

Scale	Skewness			Kurtosis		
	Statistic	Std Error	Z score	Statistic	Std Error	Z score
Diverting Attention	-.121	.287	-.0422	-.379	.566	-.677
Reintrerpreting Pain Sensations	.577	.287	2.010	-.617	.566	-1.090
Coping Self Statements	-.362	.287	-1.261	-.761	.566	-1.345
Ignoring Sensations	-.042	.287	-.146	-.208	.566	-.367
Praying/Hoping	-.083	.287	-.289	-.079	.566	-.139
Catastrophizing	1.124	.287	**3.916**	.277	.566	.489
Increase Behavioural Activities	-.119	.287	-.415	.057	.566	.101
Controlling Pain	-.530	.287	-1.847	.256	.566	.452
Decreasing Pain	-.651	.287	2.268	.029	.566	.051

Table A7.15: Z scores for pre-operative knee function

Scale	Skewness			Kurtosis		
	Statistic	Std Error	Z score	Statistic	Std Error	Z score
Pre-op clinical component KSKS	.597	.287	2.080	-.057	.566	-.0101
Pre-op clinical component KSKS excluding pain	-.756	.287	-.5634	.836	.566	1.477
Pre-op Flexion range	-.470	.287	-1.638	.061	.566	.108
Pre-op KSKS	.973	.287	**3.390**	-.043	.566	-.076
Pre-op KSKS pain component	.853	.287	2.972	.309	.566	.0546
Pre-op OKS score	-.657	.287	-2.289	-.425	.566	-.751
Pre-op OKS pain component type 1	-.586	.287	-2.042	-.395	.566	-.698
Pre-op OKS function component type 1	-.525	.287	1.829	-.522	.566	-.922
Pre-op OKS pain component type 2	-1.020	.287	**-3.554**	.455	.566	.795
Pre-op OKS function component type 2	-.298	.287	-1.038	-.436	.566	-.770

Table A7.16: Z scores for medical factors

Scale	Skewness			Kurtosis		
	Statistic	Standard Error	Z score	Statistic	Standard Error	Z score
BMI	.414	.289	1.432	-.002	.570	-.0350
Number of previous THA	1.685	.291	**5.790**	2.676	.574	**4.662**

Table A7.17: Z scores for physiotherapy key milestones patients with post-operative complications excluded

Scale	Skewness			Kurtosis		
	Statistic	Standard Error	Z score	Statistic	Standard Error	Z score
Straight leg raise	.837	.333	2.513	1.021	.656	1.556
90° bend	.476	.501	.950	-.822	.972	-.0845
Number of degrees of bend at discharge	-.932	.325	-2.867	.995	.639	1.557
Bed transfer	1.028	.369	2.786	.588	.724	.812
Chair transfer	4.104	.347	**11.827**	22.339	.681	**32.803**
Frame	.703	.343	2.049	-.455	.674	-.0675
Crutches	3.140	.330	**9.516**	14.830	.650	**22.815**
Physiotherapy sessions	3.199	.322	**9.935**	17.318	.634	**27.315**
Average physiotherapy sessions	.383	.327	1.171	-.275	.644	-.0427
Deemed ready for discharge by physio	2.616	.322	**8.124**	12.135	.634	**19.140**
Length of stay	2.143	.325	**6.122**	5.787	.639	**9.056**

Table A7.18: Z scores for post-operative knee function

Scale	Skewness			Kurtosis		
	Statistic	Std Error	Z score	Statistic	Std Error	Z score
Post-op clinical component KSKS	-1.390	.448	**-3.103**	2.546	.872	2.919
Post-op clinical component KSKS excluding pain	-1.302	.448	-2.906	1.334	.872	1.530
Post-op Flexion range	-1.107	.448	-2.471	1.326	8.72	1.521
Post-op KSKS	-.037	.333	-.111	-.898	.656	-1.369
Post-op KSKS pain component	-1.254	.333	**-3.766**	1.212	.656	1.860
Post-op OKS score	.620	.333	1.862	-.185	.656	-.282
Post-op OKS pain component type 1	.881	.333	2.646	-.119	.656	-.181
Post-op OKS function component type 1	.427	.333	1.282	-.295	.656	-.450
Post-op OKS pain component type 2	.569	.333	1.710	-.518	.656	-.790
Post-op OKS function component type 2	.579	.333	1.739	-.195	.656	-.297

Transformations Used in Normalising Data in Knee Study

Table A7.19: Transformations used in normalising knee data

Variable	Transformation
Catastrophizing (CSQ)	$\sqrt{(x + 1)}$
Pre-op KSKS	$\sqrt{(x + 1)}$
Pre-op OKS pain component type 2	Score reversed, $\sqrt{(x + 1)}$, scores reversed
No. of previous TJA	Log(x + 1)
Number of degrees of bend at discharge	Score reversed, $\sqrt{(x + 1)}$, scores reversed
Chair transfer	Log x
Crutches	Log x
Deemed ready for discharge by physio	Log x
Length of stay	Log x
Post-op clinical component KSKS	Score reversed, $\sqrt{(x + 1)}$, scores reversed
Post-op KSKS pain component	Score reversed, $\sqrt{(x + 1)}$, scores reversed

Z-scores for Transformed Variables in the Knee Study

Table A7.20: Z-scores of transformed data

Variable	Skewness			Kurtosis		
	Statistic	Standard Error	Z score	Statistic	Standard Error	Z score
Catastrophizing (CSQ)	.475	.287	1.65	-.797	.566	1.408
Pre-op KSKS	.560	.287	1.951	-.425	.566	-.0751
Pre-op OKS pain component type 2	-.497	.287	-1.732	-.492	.566	-.869
No. of previous TJA	1.113	.291	3.825	-.129	.574	-.0225
Number of degrees of bend at discharge	-.178	.325	-.548	-1.281	.639	-2.004
Chair transfer	.865	.347	2.493	2.854	.681	4.191
Crutches	.746	.330	2.26	1.739	.650	2.662
Deemed ready for discharge by physio	.327	.322	1.106	1.060	.634	1.672
Length of stay	.570	.325	1.754	1.099	.639	1.720
Post-op clinical component KSKS	-.187	.421	-.444	-.192	.821	-.234
Post-op KSKS pain component	-.718	.316	-2.272	-.395	.623	-.0634

Appendix 8

Publications

A prospective study examining the relationship between range of motion, pain, and scores on Self-Report Harris Hip Score and Oxford Hip Score in Total Hip Arthroplasty Patients

Gibson CN, Hamer AJ. Enderby PM, Mawson, SJ & Norman P.

The study aimed to determine how well recorded pain levels and range of motion relate to patients' reported levels of functional ability/disability pre- and post- total hip arthroplasty.

Range of motion (ROM), Oxford Hip Score (OHS) and Self-Report Harris Hip Score (HHS) were recorded pre-operatively and 3-months post-total hip arthroplasty. Pearson's correlation coefficients were calculated to determine the strength of the relationships both pre- and post-operatively between ROM (calculated using the HHS scoring system) and scores on OHS and HHS and response relating to pain from the questionnaires (question 1 HHS and questions 1, 6, 8, 10, 11 and 12 of OHS) and overall scores.

Only weak relationships were found between ROM and HHS pre- ($r = .061$, $n = 99$, $p = .548$) and post-operatively ($r = .373$, $n = 66$, $p = .002$). Similar results were found for OHS, and when ROM was substituted for flexion range. In contrast, strong correlations were found between OHS pain component and HHS pre- ($r = -.753$, $n = 107$, $p<.001$) and post-operatively ($r = -.836$, $n = 87$, $p<.001$) .Strong correlations were also found between OHS pain component was correlated with the HHS functional component only (HHS with score for questions relating to pain deducted) pre- ($r = -.665$, $n = 107$, $p<.001$) and post-operatively ($r = -.688$, $n = 87$, $p<.001$). Similar results were found when the HHS pain component was correlated with OHS.

In orthopaedic clinical practice ROM is routinely used to assess the success or failure of arthroplasty surgery. These results suggest that this should not be done. Instead, asking the patient the level of pain that they are experiencing may be a good determinant of level of function. The results of this study may aid the development of arthroplasty scoring systems which better assess patients' functional ability.

PREDICTORS OF SUCCESS OF TOTAL HIP REPLACEMENT IN PATIENTS WITH OSTEOARTHRITIS

Clare Gibson*, Pam Enderby*, Sue Mawson**, Paul Norman***, Andy Hamer****

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Total Hip Replacement (THR) is routinely conducted to relieve pain and loss of function in osteoarthritis of the hip. The success of this procedure is variable; it is not possible to explain the variance in outcome solely with demographic and medical factors. This study assessed whether psychological factors were partially responsible for outcome of THR.

Pre-operatively, patients completed NEO-Five Factor Inventory, Multi-dimensional Health Locus of Control questionnaire, and Coping Strategies Questionnaire. Pain and function were assessed at baseline and 3-months post-operatively using the Oxford Hip Score (OHS) and the Self-Report Harris Hip Score (HHS). For the purpose of analysis the OHS and HHS were split into components representing pain and function. Forward stepwise multiple regression analyses were conducted to identify psychological, medical and demographic factors which predicted outcome of THR at 3-months post-surgery.

3-month data was recorded for 82 patients. 31% of the variance in the scores for HHS functional component was explained by pre-operative functional level and Catastrophizing. Pre-operative function was positively associated whilst Catastrophizing was negatively associated. Similar findings were recorded for OHS functional component. Pre-operative pain was a significant predictor in the regression models for OHS pain and HHS pain.

Levels of pre-operative pain and function are important in predicting levels of pain and function in patients 3-months post-THR. In addition, Catastrophizing, a cognitive coping strategy associated with negative thoughts about the future, appears to be an important predictor of poorer post-operative functioning.

Pre-operative function and pain and tendency to Catastrophize are predictors of success of THR.

a) The effect of physiotherapy intensity on achievement of inpatient physiotherapy key functional milestones post-total hip replacement in patients with osteoarthritis

b) Clare Gibson[1], Dr Sue Mawson[2], Professor Pam Enderby[1], Mr Andrew Hamer[3], Dr Paul Norman[4]

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d) Congress programme tracks on topic areas:

- Track one (global health): chronic diseases: arthritis
- Track one (global health): disability
- Track two (professional issues): service delivery/models the practice
- Track five (research and development): implementation

e) Abstract (see next page)

f) Sheffield North Ethics Committee

g) Brief biography of presenting author:

Clare graduated with a degree in physiology in 1999. She had previously studied psychology at A-level. An interest in psychological factors which affect rehabilitation success led her to take up a PhD place within a rehabilitation team. The abstract presented focuses on some of the work from this PhD which assesses the effect of personality, pain coping strategies, locus of control, demographic and other factors on recovery following total hip and knee replacement.

h-m) not applicable

n) Submitted As Research Report. No alternative category of presentation would be acceptable

o) An alternative presentation format would be acceptable i.e. poster presentation.

p) No publications or presentations of this work have been made prior to the Congress.

The effect of physiotherapy intensity on achievement of inpatient physiotherapy key functional milestones post-total hip replacement in patients with osteoarthritis

Clare Gibson, Sue Mawson, Pam Enderby, Andrew Hamer, Paul Norman

Purpose: To assess factors (psychological, demographic, medical and physiotherapy) which affect recovery following total hip replacement (THR) in patients with osteoarthritis (OA).

Relevance: OA is a major cause of disability in the elderly. THR is routinely conducted to relieve pain and loss of function associated with OA. Around 50,000 THR are performed annually in England, approximately 82% of these resulted from OA. This is a major burden on the NHS that will increase with the aging population. Increased demand for THR could be tackled by optimising the rehabilitation process following surgery and thus reducing the length of stay (LOS). Recovery time and LOS following THR is hugely variable. Medical and demographic factors, account for some, but not all, of this variability. It was hypothesised that patients' personality and coping strategies would affect the success of rehabilitation following THR. A second hypothesis stated that intensity of treatment may affect the achievement of these milestones.

Participants: Consecutive patients attending pre-admission assessment clinic (under the care of one of five clinicians conducting surgery at three hospitals) for unilateral THR as a result of OA were invited to take part in the study. 159 patients consented of which 99 successfully completed the pre-operative questionnaires and had their surgery within the study time frame.

Methods: Participants completed psychological and demographic questionnaires prior to surgery. Data regarding time in days to achieve key physiotherapy milestones (bed transfer, chair transfer, independence with frame, independence with crutches, physiotherapy discharge, post-operative LOS) were recorded from the patients' notes. The physiotherapists treating the patients were blinded to the purpose of the study. Physiotherapy intensity was calculated by dividing the number of physiotherapy sessions a patient received by the number of days until discharged from the inpatient physiotherapy team.

Analysis: Pearson correlations were recorded between the independent and dependent variables (key milestones). Independent variables which significantly correlated ($p < .05$) with the dependent variable where included in a forward stepwise multiple regression analysis.

Results: Physiotherapy intensity significantly correlated with all key functional milestones. Few psychological variables have significant associations with the milestones. Multiple regression analysis revealed physiotherapy intensity to be linked to only bed transfer and chair transfer. However, hospital in which the patient was treated was a predictor of the other milestones. A

statistically significant relationship existed between hospital and physiotherapy intensity. The regression analyses were repeated with hospital excluded as a predictor. The repeat analyses revealed physiotherapy intensity a predictor of bed transfer, chair transfer, independence with frame, independence with crutches and LOS. The proportion of the variance predicted solely by this factor ranged from 3-12%.

Conclusions: Intensity of treatment predicts time taken to achieve key physiotherapy milestones post-THR. As the sample size was small, repeating with a larger population size would be beneficial.

Implications: Providing more physiotherapy sessions per day post-THR is associated with earlier independence and reduced LOS. Increasing physiotherapy input will allow a greater throughput of patients freeing vital bed space and contributing to reduction in waiting list times.

Keywords: physiotherapy intensity

Funding Acknowledgements: unfunded.

Acknowledgements

Acknowledgements

I would like to thank all four of my supervisors (Professor Pam Enderby, Dr Sue Mawson, Mr Andy Hamer, and Dr Paul Norman) for their help and enthusiasm throughout the course of my PhD project and write-up. Special thanks go to Pam who diligently read every draft of chapter and thesis which I threw at her. I am grateful to the members of the Lower Limb Arthroplasty Unit (Mr Simon Buckley, Mr Andy Hamer, Mr Bob Kerry, Mr Ian Stockley and Mr Wassim Tomouk) for allowing me to attend their pre-admission assessment clinics and for recording range of motion of the patients. Thanks also goes to their secretaries Liz, Kathryn, Denisee, Jenny, Debs, Rose-Marie, Glenda and to the waiting list co-ordinators Pam and Jeanette for letting me regularly pester them for information on my patients. I most grateful to Sister Diane Swift for her help on the study and also her friendship. A special thanks to Barbara Selvon (Arthroplasty Specialist Nurse) for tirelessly recording the three-month range of motion data. Thanks to all the pre-assessment nurses for putting up with me during my 18-month recruit period. Thank you to Linda Newton and Claire Munson to granting me access to the notes!

An extra big thank you to Heather Kolar for being my hands through out large parts of the project. The biggest thanks must go to my family especially my wonderful husband who has supported me (financially and emotionally) through out my PhD. Also to my parents, Janet and David, and to my sister Ruth, for letting me rant when I was fed up! And to my Mum for providing grammatical advice. Thank you to Tessa D for hugs and kisses and finally a great big thank you to Mr Monkey in his Emporium who has created a whole range of tasty treats whilst I have been writing up.