

Group 1

Effectiveness of telerehabilitation interventions in improving health outcomes of individuals with chronic disease: A systematic review

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Purpose/ Objectives & Rationale: The purpose of this systematic review is to examine the current literature to assess the effectiveness of various physiotherapy telerehabilitation (TRH) interventions on heart disease, stroke and chronic obstructive pulmonary disease (COPD). TRH has become a rapidly-growing method of healthcare delivery and no recent review has yet to examine TRH efficacy on a disease-specific basis.

Relevance: Physical Therapy is often relied on for rehabilitation of patients post-stroke, heart disease and COPD. This is a particularly impactful and timely review that contributes to the development of physical therapy delivery models for rural and remote regions.

Materials & Methods: The following databases were searched: Medline, Embase, CINAHL and the Cochrane Library. 15 studies were included in the review, dating 2001- 2014. Seven studies were carried out in USA, three in Italy, two in Slovenia, two in Australia, and one in Norway.

Analysis: There were four randomized control trials, three case series, three non-random trials, two cross-sectional studies, two controlled before and after studies, and one concurrent cohort study.

Results: Overall, TRH interventions showed benefits for COPD and stroke. There was some evidence to suggest that TRH interventions can improve health outcome measures for both of these populations.

Conclusions: Insufficient quality and number of randomized control trials to make a conclusion on efficacy of interventions. Meta-analysis should be conducted to quantitatively assess the data.

Keywords: Telerehabilitation, COPD, stroke, physical therapy

Supervisors: Robin Roots, BA, BHScPT, MSc Rehab Sci, RPT; Linda Li, PT, PhD

Group 2

Changes of Muscle Oxygenation During Isometric Contraction of Forearm Muscles Monitored by Near Infrared Spectroscopy (NIRS), a Systematic Review

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Purpose/Objectives & Rationale: NIRS is a low-cost, non-invasive, real time and direct method of monitoring hemodynamics. The purpose of this systematic review is to evaluate trends of muscle oxygenation during sustained isometric forearm flexor muscle contractions. This is done by studying changes of oxygenated (O₂Hb) and deoxygenated hemoglobin (HHb) of contracting muscles monitored by NIRS.

Relevance: Understanding changes in muscle oxygenation and hemodynamics in response to different degrees of muscle voluntary contraction (MVC%) provides valuable information in exercise science and rehabilitation.

Materials and Methods: MEDLINE, Cinahl, EMBASE, SPORTDiscus and Compendex databases were searched from the earliest available dates to August 25, 2014. Two independent reviewers identified potential pre/post studies involving healthy adults with forearm adipose thickness ≤ 10 mm. Isometric contraction durations ≥ 10 sec with relative change in O₂Hb and HHb as primary outcome measures. Two independent evaluators completed quality assessment.

Analysis: Trends regarding oxy- and deoxyhemoglobin were identified and qualitatively described. The primary focus was on magnitude and duration of observed changes between initial and peak change.

Results: From 1,351 articles, 6 met inclusion/exclusion criteria and were included in this review. These articles showed consistent oxy- and deoxyhemoglobin trends. During contraction, deoxyhemoglobin increased and oxyhemoglobin decreased. Magnitude and rate of change depended on MVC% and duration of contraction.

Conclusions: Isometric contraction of forearm muscles reduces muscle O₂Hb and increases muscle HHb. All articles followed similar trends of muscle oxygenation except for one outlier. This review was limited by the low number of eligible articles. Comparison between articles was also limited due to varying experimental protocols and reported values.

Keywords: Near Infrared Spectroscopy, NIRS, Muscle oxygenation, Oxygenated hemoglobin, Deoxygenated hemoglobin, Isometric contraction, Oxyhemoglobin, Deoxyhemoglobin, Tissue Metabolism
Supervisors: Babak Shadgan, MD, PhD; W. Darlene Reid, PT, PhD

Group 3

Perceptions of Telerehabilitation in Stroke Recovery: A Survey

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Purpose/ Objectives & Rationale: The study aims to describe the accessibility to information and communication technologies (ICTs) and the willingness to use them for rehabilitation programs following a stroke. This exploratory study endeavors to further guide future research and development of telerehabilitation programs for community-dwelling individuals post-stroke.

Relevance: Interest in telerehabilitation is growing and represents an opportunity to increase access to rehabilitation services following stroke.

Materials and Methods: Community-dwelling adults following a stroke participated in a cross-sectional, self-reported survey administered online, by phone, mail or in-person. The survey categories included: access to rehabilitation, use of ICTs, thoughts on telerehabilitation, demographics, and stroke history/health.

Analysis: Descriptive statistics were conducted using frequencies and percentages.

Results: 130 participants received the survey and 80.7% (n=105) were returned. Mean age was 67.5 years (± 11 years), 67% were urban-dwelling and 63% (n=63) of respondents reported at least moderate disability. Access was highest for television (89%, n=92), landline phone (87%, n=90) and computer (78%, n=81). User confidence and interest for telerehabilitation delivery followed a similar trend to access. The majority of respondents were interested in receiving rehabilitation at home (85%, n=87), agree that telerehabilitation would make accessing stroke care easier (83%, n=84) and enhance current care (73%, n=74).

Conclusions: The most commonly owned ICTs are the technologies that respondents felt most confident using and thus willing to use for telerehabilitation. Focus for future research and development should be on education, therapeutic exercise and adaptive equipment to ensure effective use of ICTs.

Keywords: telerehabilitation, stroke, telehealth, communication technology

Supervisors: Dr. Eng J, Dr. Sakakibara B.

Group 4

Ultrasound Measurement of Vastus Medialis Architecture in Healthy Active Adults

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Purpose/Objectives & Rationale: The relationships between sex, vastus medialis muscle architecture, knee angles and maximal voluntary contraction are not yet known. Pennation angle, muscle thickness and fibre orientation have not been thoroughly investigated in the vastus medialis (VM) when across knee angles.

The objectives of this study were to further our understanding of the muscle architecture of the human quadriceps muscle, sex differences in this architecture and its relation to quadriceps maximal voluntary contraction and how the architecture changes across knee angles.

Relevance: Characterization of this relationship will provide better understanding of VM muscle function and its relationship to patellofemoral pain syndrome (PFPS).

Materials and Methods: 20 healthy participants completed Maximal Voluntary Isometric Contractions (MVC) and maximal isokinetic contractions (MIC) of the right quadriceps and ultrasound imaging of right VM. Inter-rater reliability of ultrasound measurement was also investigated.

Analysis: VM architecture was analyzed using repeated measures ANOVA, its relationship to strength by correlational analysis and inter-rater reliability by Intraclass Correlation Coefficient.

Results: Sex differences exist in the distal VM pennation angle ($p < 0.001$) and fibre orientation ($p < 0.001$). There is a stronger correlation between muscle pennation and MVC compared to thickness and MVC in males ($R = 0.8$, $R = 0.7$, respectively). VM thickness and pennation was affected by knee angle. Inter-rater reliability is acceptable for some measures, but not fiber orientation.

Conclusions: There is a relationship between architecture of VM and maximal strength output. Sex differences in muscle architecture may contribute to increased incidence of PFPS in females.

Keywords: Ultrasound, Vastus Medialis, Architecture, Strength

Supervisor: Dr. Jayne Garland, PhD PT

Group 5

Sex differences in the qualitative dimensions of exertional dyspnea in healthy adults

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Purpose/ Objectives & Rationale: Studies show that women consistently report higher levels of dyspnea than men across the spectrum of health and chronic respiratory diseases but the mechanisms are incompletely understood in both pathological and healthy populations. This study aimed to explore sex-based differences in operational lung volumes and sensory responses during symptom limited incremental cycling exercise.

Relevance: To establish baseline understanding of sex differences in dyspnea in physically active adults to provide a foundation for understanding dyspnea as it relates to pathological populations that physiotherapists treat.

Materials and Methods: Seventy healthy participants (35M/35F) completed an incremental cycle test to volitional fatigue, with breath-by-breath analysis of ventilatory and metabolic responses. Subjects rated intensity of breathing using the Borg scale and selected phrases that described their breathing during each exercise stage. After completion of the test, subjects chose standardized phrases that described their breathing at maximal exercise.

Analysis: Comparisons for variables at standardized submaximal work rates were conducted using repeated measures ANOVA. Sex differences in reason for discontinuing exercise and qualitative descriptors of dyspnea were analyzed using Fisher's exact test. Statistical significance was set at $p < 0.05$.

Results: Women had greater dyspnea vs. ventilation slopes compared to men during exercise. At peak exercise, women were significantly more likely to select phrases related to inspiratory difficulty. Women had higher end-inspiratory lung volumes and adopted a more rapid and shallow breathing pattern throughout exercise compared to men.

Conclusions: Men and women have similar perceived subjective quality of dyspnea during submaximal exercise but differences emerge at maximal exercise, likely related to sex differences in breathing patterns and operating lung volumes.

Keywords: dyspnea, sex differences, healthy adults, exercise

Supervisor: Jordan Guenette, Ph.D

Group 6:

Are physiotherapists active enough to be effective physical activity promoters?

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Purpose/ Objectives & Rationale: Previous research shows that physically active health-care providers are effective at promoting Physical Activity (PA) to their patients. Our purpose is to examine PA and sedentary time of physiotherapists in 3 aims:

- i) Describe PA and sedentary time across various PA domains.
- ii) Compare PA between PTs of different practice settings.
- iii) Determine the agreement between subjective and objective measures of PA.

Relevance: PTs as primary health-care providers are positioned to be effective health promoters.

Material and Methods: A cross-sectional research design used a self-administered PA questionnaire ($n=98$). A sub-set of this sample consented to objective collection of PA using an accelerometer ($n=38$).

Analysis: Descriptive statistics were employed to describe demographic data and PA. Inferential statistics were employed to determine correlation and agreement between subjective and objective measures of PA. This was calculated using intra-class correlation.

Results: Questionnaire results show median total moderate-to-vigorous PA was 1092 minutes per week, work median moderate-to-vigorous PA was 240 minutes per week and leisure time median moderate-to-vigorous PA was 335 minutes per week. 99.0% of participants reported PA exceeding the Canadian Society of Exercise Physiologists (CSEP) recommended 150 minutes per week. Differences in PA were found for some domains between PT practice settings. A poor level of agreement was found for all domains of PA when comparing subjective and objective measures.

Conclusions: Reported PA levels indicate PTs should be effective PA promoters. PA habits are different between PTs at different practice settings. Poor agreement between objective and subjective measures of PA suggest PTs over-report on subjective measures of PA.

Keywords: Physical Activity, Physiotherapist, Physical Therapist, Accelerometer, IPAQ

Supervisors: Kristin Campbell BSc. PT, PhD; Sarah Neil-Sztramko BSc., MSc

Group 7

Patient-Centered Care in Physical Therapy: Systematic Review of its Definition, Operationalization, and Outcomes

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Purpose/ Objectives & Rationale: The concept of patient-centered care (PCC) has yet to be clearly defined. The term PCC is frequently used in healthcare despite the lack of a well described relationship between PCC compared to usual care. The purpose of this review is to (1) identify how the term PCC is being conceptualized, operationalized, and implemented in the physical therapy (PT) literature; and (2) to determine an understanding of how it has been evaluated.

Relevance: PCC will enable PTs and health researchers to share a common language and to structure its implementation so that it can be better evaluated.

Materials and Methods: CINAHL, Medline, PsycINFO, PubMed, and SportDiscus databases were searched using a combination of keywords from inception to April 2015. Two authors performed title, abstract, and full-text screening. Study protocols and expert opinion were excluded.

Analysis: Data was synthesized by retrieving definitions, implementation, and implications of PCC, along with analyzing study characteristics and outcome measures.

Results: 1475 articles were retrieved from the search; 8 met inclusion criteria. The terms used to represent PCC varied widely. Frequently, no definitions were provided while implementation and clinical implications were described. Mixed relationships were found between PCC and the outcome measures. The majority of articles had low levels of evidence.

Conclusions: PCC is commonly considered part of PT practice; however, it is not used with a strict definition. A clear relationship between PCC and improved outcomes is not established. Part of effective delivery of PCC appears to be the implementation of an interdisciplinary approach, which limited the results of a PT-specific review.

Key Words: patient-centered care, chronic disease, physical therapy, patient involvement, patient goal setting

Supervisor: Elizabeth Dean, PhD, MS, DipPT

Group 8

Evaluation of the acute effects of moderate intensity aerobic exercise on neuroplasticity and the acquisition of a novel motor task in healthy adults.

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Purpose/ Objectives & Rationale: High-Intensity exercise primes the brain to learn in healthy people but may be hazardous in clinical populations. This study evaluates the acute influence of moderate-intensity, aerobic exercise (AE) on motor learning and responses to paired-associative stimulation (PAS) to prepare for larger trials in stroke population.

Relevance: Establishing an appropriate dose of exercise to facilitate improvements in motor impairments will improve stroke rehabilitation.

Materials and Methods: This experimental pseudo-randomized crossover with repeated measures design explores neuroplasticity and motor learning following a single 30 minute bout of moderate-intensity cycle-ergometry (60% VO₂max) and rest. Experiment1 (E1): Temporal and spatial performance of a novel motor task is measured using Continuous Tracking (CT) task. Experiment2 (E2): Long-term potentiation-like neuroplasticity is measured using transcranial magnetic stimulation (TMS). (Healthy adults aged 19-45 (E1 n=16, E2 n=15))

Analysis: Mixed model analysis of variance (ANOVA) with participants subjected to repeated measures to analyze motor evoked potential recruitment curves (MEP RC) and continuous tracking (CT) task data.

Results: Spatial accuracy was significantly decreased under the rest condition [$p=0.050$]; but maintained under the exercise condition [$p=1.00$]. Temporal precision was unaffected by the conditions [$p=0.002$]. There was no difference at retention for either outcome [$p\geq 0.532$]. AE prior to PAS did not enhance neuroplasticity. A trend towards increased corticospinal excitability post-PAS was found regardless of the condition [$p=0.068$], with no difference between conditions [$p=0.586$].

Conclusions: These results suggest a single-bout of moderate-intensity exercise is an insufficient dosage to impact motor learning and neuroplasticity. Further research employing a higher-intensity dose is warranted prior to investigation in clinical populations.

Keywords: exercise, motor learning, neuroplasticity, paired-associative stimulation

Supervisors: Lara Boyd, PT, PhD; Nick Snow, BKin(Hons), CSEP-CEP, MSc.

Group 9

Effectiveness of digital patient decision aids for making health-related decisions: A Systematic Review

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Purpose/ Objectives & Rationale: Shared decision-making (SDM) is becoming the gold standard in healthcare, and patient decision aids (PtDAs) have the capacity to improve the quality of decisions related to treatment and screening. Digital PtDAs are increasing in popularity. This systematic review will explore the effectiveness of digital, interactive PtDAs for making health related decisions by making comparisons to non-digital PtDAs or usual care.

Relevance: As primary care practitioners, it is important for physiotherapists to understand the benefits of PtDAs in order to enhance patient education and the discussion of treatment options.

Methods: EMBASE, CENTRAL, CINAHL, Pubmed, Medline, PEC, and BMC databases were searched from October 2014 to March 2015. Two independent reviewers conducted title and abstract screening followed by full text screening. Methodological quality was assessed by two independent reviewers using PEDro. 17 RCTs were included, evaluating PtDA effectiveness on the following outcomes: decisional conflict, health-related knowledge, decision satisfaction, accuracy of risk perceptions, and decision self-efficacy.

Analysis: Meta-analysis compared outcomes for decisional conflict and health-related knowledge. The remaining outcomes were evaluated qualitatively.

Results: Significant improvements in decisional conflict and knowledge scores were observed in intervention groups using digital PtDAs compared to usual care or non-digital aids. Decisional satisfaction was often not significantly different between digital PtDA and non-digital PtDA interventions, and satisfaction often increased within groups regardless of PtDA format. Other qualitative outcomes demonstrated similar trends.

Conclusions: Digital PtDAs are effective at decreasing decisional conflict and increasing knowledge scores. For the majority of outcomes evaluated, the format of PtDA appears to be less important when evaluating PtDA effectiveness.

Keywords: Shared decision-making, patient decision aid, digital, decision support techniques

Supervisor: Dr. Linda Li, PT, PhD

Group 10

The relationship between RPE and maximal run time in healthy recreational runners

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Purpose/ Objectives & Rationale: Runners have difficulties estimating a consistent running speed to reach exhaustion in a given time. This is a typical protocol for exhaustive biomechanical run studies. The study purpose was to investigate the relationship between initial rating of perceived exertion (RPE) and maximal run time in healthy recreational runners.

Relevance: This was a pilot study to validate the use of RPE as a method of prescription for exhaustive exercise.

Materials & methods: Ten healthy recreational runners were recruited and performed three trials 7-10 days apart of exhaustive runs on a treadmill under three conditions. Each condition was performed at a consistent self-selected pace corresponding to an initial RPE of 12, 13, or 14, for conditions 1, 2, and 3, respectively. RPE, heart rate, and time elapsed were recorded at every minute.

Analysis: A repeated measures ANOVA and pairwise comparisons were performed to analyze the results.

Results: Run duration was significantly longer in conditions when the initial RPE was lower (mean of 55.7, 34.3, and 19.8 mins for conditions 1-3; $p \leq 0.01$). RPE data showed perceived effort as greater for the duration of their run during conditions where the initial RPE was higher ($p \leq 0.01$).

Conclusions: Individuals who start running at a higher intensity continue to perceive their effort as being more intense throughout the run than if they start at a lower intensity. They are unable to continue running for as long as when they begin at a lower intensity.

Key Words: Physical activity; run intensity; exhaustive run; exercise prescription

Supervisors: Michael Hunt, PT, PhD; Chris Napier, BSc, MPT

Group 11

A Descriptive Analysis of the Clinical Presentation in Pediatric Concussion Patients

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Purpose/ Objectives & Rationale: Despite having diagnostic criteria, a means of predicting the presence of post-concussion syndrome (PCS) has yet to be determined. This study provides a descriptive analysis of the clinical presentation of PCS in the pediatric population.

Relevance: To guide future research for diagnostic and recovery indicators in the physiotherapy practice for pediatric PCS.

Materials and Methods: Investigators retrospectively reviewed 39 charts from Kids Physio Group of individuals treated for PCS signs and symptoms (S/S) between January-30-2012 to October-20-2014. Each chart was categorized into sport-related (n=27) vs. non-sport related (n=12) method of injuries (MOI). Within each MOI, the number of children presenting with general S/S (physical, cognitive, behavioural, and/or sleep disturbances) and neurological S/S (eye movement, upper extremity (UE) pain/limitation, balance/coordination, ambulation, pronator drift, and/or speech) was tabulated.

Analysis: Data was analyzed using relative risk (RR) calculations with inter/intra group comparisons.

Results: Physical S/S presented with the highest RR for both groups, followed by cognitive disturbances (Sport: RR=1.0800, p=0.1574; Non-Sport: RR=1.200, p=0.1579). Eye movements and balance/coordination problems were found in all sport-related concussions. Eye movements and UE pain/limitation were found in all non-sport related concussions. The RR for eye movement problems for both MOI groups combined was 0.8000 (p=0.2342).

Conclusions: Physical, cognitive, and eye movement S/S were most commonly observed. Future research may focus on eye movement disturbances as a possible diagnostic tool and/or an indicator of recovery from PCS in children.

Keywords: Concussion, post concussion syndrome, paediatric, diagnostics

Supervisor: Naznin Virji-Babul PT, PhD

Group 12

Spatial and Temporal Gait Profiles of Stable COPD Patients: A Descriptive Pilot Study

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Purpose/ Objectives & Rationale: In a clinical population, gait is a strong predictor of independence and functional well-being. While COPD patients are known to exhibit gait abnormalities, no comprehensive evaluation of gait in the COPD population currently exists in the literature.

Relevance: Understanding the gait profile of COPD patients may improve rehabilitation strategies, patient outcomes, and decrease falls risk.

Materials and Methods: Eight participants currently enrolled in a pulmonary rehabilitation program performed three walking trials on a pressure sensitive walkway. Spatial and temporal gait characteristics were recorded using the GaitRITE software.

Analysis: Gait parameters data (mean \pm SD) were compared to normative data found from similar study using a single sample t-test. Pearson's R correlational tests were performed to observe any relationships between gait parameters and patient characteristics.

Results: No significant differences were found between the COPD population and the normative data for any gait characteristics examined. The following parameters were derived (mean \pm SD): stride length (137.0 \pm 19.2 cm), cadence (109.3 \pm 15.8 steps/min) and gait velocity (124.6 \pm 25.2 m/s). Strong correlations were found with FEV1/FVC1 and 6MWD (r = 0.71), cadence (r = 0.69) and double limb support (r = 0.53).

Conclusions: Our findings suggest that COPD does not negatively impact the gait-profile. Further research is required. A comprehensive gait profile of COPD patients has yet to be fully established and compared to healthy age-matched counterparts

Keywords: COPD; Gait; GaitRITE; Gait Profile

Supervisors: Dr. Pat Camp, PT, PhD; Julie Cheng, PT

Group 13

Do Students' Perceptions of Working in Acute Care Change during their Physiotherapy Education?

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Purpose/ Objectives & Rationale: To determine if and how UBC MPT students' perceptions of acute care change during their physiotherapy education and if there is a difference in perceptions between males and females.

Relevance: Interest in working in an acute care setting as a physiotherapist has declined, which poses a risk of losing this scope of practice to other healthcare professionals. Of the 79 students who graduated in 2012 and responded to PABC's email survey none of them ranked an acute care setting in their top three choices for future employment. It is unclear as to why this trend away from working in acute care is occurring.

Materials and Methods: An electronic survey of 4 questions was administered to the 2014, 2015 and 2016 UBC MPT cohorts. A focus group was conducted to clarify response terms to assist with coding. Graphical representations across the cohorts were then utilized to demonstrate any trends.

Analysis: A qualitative analysis of survey results was completed and commonalities were noted.

Results: Findings demonstrated that students' desire to work in an acute care setting decreased throughout their progression through the UBC MPT program for a multitude of reasons. There was also a difference between males and females in regards to preferred future area of work with males noting a higher preference for private practice.

Conclusions: As students progressed through the UBC MPT Program they carried a negative perception of working in the acute care setting which was unchanged after going on placements through the entirety of the program.

Keywords: Acute care, students, perception, physiotherapy, MPT

Supervisors: Sue Murphy, B.H.Sc (PT) M.Ed.; Alison Greig, BHK, BSc (PT), PhD

Group 14

Predicting clinical outcomes of a multidisciplinary pain management program in injured workers: A retrospective cohort study

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Purpose/ Objectives & Rationale: Chronic pain is a global health issue that is estimated to affect approximately 600 million people, with the working population most greatly affected. The purpose of this study is to determine whether age, sex, primary language, and presence of Complex Regional Pain Syndrome (CRPS) influence depression, pain, and fitness to return to work (RTW) in injured workers following completion of a multidisciplinary pain management program.

Relevance: Injured workers often experience depression and chronic pain, which negatively affects their quality of life, psychosocial well-being, and RTW prognosis.

Materials and Methods: The study was a retrospective chart review of 342 patients who completed a multidisciplinary pain management program between 01/2010 and 12/2014. Outcomes included the Beck Depression Index (BDI-II), Brief Pain Inventory, and fitness to RTW.

Analysis: The data were analyzed using multivariate logistic regression.

Results: Sex ($p < 0.05$) and primary language ($p < 0.01$) were significant predictors of BDI scores, with females showing greater improvement and non-English speakers showing deterioration in scores between assessment and discharge. Age ($p < 0.05$) and presence of CRPS ($p < 0.01$) were significant predictors of fitness to RTW, with younger age groups and those without CRPS being least likely to be discharged as not fit to RTW. Age ($p < 0.05$) was the only significant predictor of pain severity and interference scores, with younger patients being most likely to achieve improved pain outcomes.

Conclusions: The current findings suggest that certain patient characteristics affect clinical outcomes following completion of a pain management program. This study will help clinicians and Workers Compensation Insurers identify patients most likely to benefit from program participation.

Keywords: Chronic pain, depression, pain management program, occupational rehabilitation, injured workers, return to work

Supervisors: Alex Scott, BScPT PhD; Teresa Liu-Ambrose, BScPT PhD; Pamela Summers BScPT

Group 15

Predicting Clinical Outcomes of a Multidisciplinary Occupational Rehabilitation Program in Men and Women with Work-Related Musculoskeletal Pain: A Retrospective Cohort Study

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Purpose/ Objectives & Rationale: To evaluate the predictive power of patient and injury characteristics on outcomes of a musculoskeletal pain program.

Relevance: Musculoskeletal pain is an important area of study, as this is a significant cause of work-time lost. This data could help clinicians plan rehabilitation programs that are based on patient and injury characteristics as well as their predictive ability.

Materials and Methods: Retrospective chart review was performed on an adult occupational rehabilitation program in 258 participants. Outcomes include OMPSQ (Orebro Musculoskeletal Pain-Screening Questionnaire), TSK (Tampa Scale of Kinesiophobia) and durability of RTW (return-to-work). Predictor variables used were location of injury, age, gender, and time elapsed from injury to program assessment.

Analysis: All continuous outcome variables were evaluated using a multiple-regression model and all dichotomous outcome variables were evaluated using a logistic regression model. Secondary analysis included comparing all predictor variables using a Pearson-Product-Correlation Matrix or a Spearman's-Rho Correlation Matrix.

Results: Spearman's-Rho correlation found males take longer to enter rehab ($p=0.008$). Location of injury predicted pre and post OMPSQ score, but did not significantly influence the change of scores ($p=0.002$, $p=0.003$). Time to entry influences change in scores and final score for OMPSQ ($p=0.022$). Logistic regression found that longer time to entry was significantly related to a lower durability of RTW ($p=0.011$).

Conclusions: Investigations indicate time elapsed from injury to rehabilitation onset may be a factor in chronic pain or movement avoidance. Analysis indicates severity is increased in spine-related injuries, underlining the significance of early management of spinal injuries.

Keywords: Rehabilitation, Physiotherapy, Musculoskeletal Pain, Return to Work

Supervisors: Teresa Liu-Ambrose, PhD; Alex Scott, PhD

Group 16

The Effect of Nordic Walking on Functional Mobility and Quality of Life in Individuals with Parkinson's Disease: A systematic review.

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Purpose/ Objectives & Rationale: Parkinson's disease (PD) is a neurological condition that causes impairments including rigidity, bradykinesia, tremor and postural instability which contribute to reduced mobility and quality of life. Nordic walking (NW) is a safe and accessible mode of exercise for healthy individuals and some patient populations, though its effect on individuals with PD has not been adequately established. This review examined the effectiveness of NW programs in a PD population.

Relevance: Identification of beneficial modes of exercise to prescribe PD patients will improve the care physiotherapists provide this population.

Materials and Methods: Evidence was compiled from six articles of varying research designs written between October 1946 and October 2014 selected from the following databases: Medline, EMBASE, PubMed, SPORTDiscus, PsycINFO, and CINAHL. Two independent reviewers identified studies that used NW programs of at least two weeks in length and measures of quality of life and functional mobility. Quality of articles were assessed using Down's and Black quality assessment tool.

Analysis: Data was synthesized by calculating the Cohen's d effect size and relationships were analyzed.

Results: NW programs improve gait speed, Timed up and go (TUG), Parkinson's disease questionnaire (PDQ-39), unified Parkinson's disease rating scale (UPDRS) scores. Three NW programs reported significant improvements compared to conventional exercise programs in all four outcome measures.

Conclusions: This review supports the implementation of NW programs to improve ambulation, functional mobility and quality of life for individuals with Parkinson's disease. Further research utilizing larger sample sizes must be performed to validate it as an optimal mode of exercise for this population

Keywords: Parkinson's disease, Nordic walking, Quality of life, Functional mobility

Supervisors: Alison Greig, BHK, BSc (PT), PhD; Sue Murphy, B.H.Sc (PT) M.Ed.

Group 17

Is the word being heard? A cross-sectional examination of the relationship between physical activity & sedentary behaviour and self-perceived health

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Purpose/ Objectives & Rationale: Physical activity (PA) lowers the risk of many non-communicable diseases while sedentary behavior, independent of PA, has negative health effects. It is unclear if Canadians know that activity levels impact health. This project sought to investigate if PA and sedentary behaviour are independent predictors of self-perceived health among Canadians.

Relevance: A significant role of physiotherapists is to educate clients regarding the importance of an active lifestyle. To do this effectively physiotherapists should know how aware Canadians are of the relationship between PA, sedentary behaviour and health.

Materials and Methods: Data were obtained from the 2011-2012 Canadian Community Health Survey. Variables were created to represent the dependent variable (self-perceived health), independent variables (PA and sedentary behaviour) and confounders.

Analysis: Ordinal logistic regression was used to calculate adjusted odds ratios (AOR) and 95% confidence intervals (CI).

Results: Of the sample, 46% were identified as 'inactive', 12% were sedentary >40 hrs/wk, and 61% rated their health as excellent/very good. Controlling for age, sex, BMI, education and chronic conditions the AOR of having fair/poor self-perceived health relative to excellent/very good for individuals who were sedentary >40hrs/wk relative to <10 hrs/wk was 2.3 CI(2.1-2.4). The AOR of having fair/poor relative to excellent/very good self-perceived health for individuals who were inactive compared to active was 3.1 CI(2.9-3.3).

Conclusions: Sedentary behaviour and PA were significant predictors of self-perceived health indicating Canadians are aware of the impact of inactivity on health. Future health promotion efforts should focus on encouraging individuals to engage in PA and reduce sedentary behaviour to improve health and well-being.

Keywords: Physical Activity, Sedentary Behaviour, Self-Perceived Health, Active Lifestyle

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