DEPARTMENT OF PHYSICAL THERAPY
PHTH 572 POSTER PRESENTATION RESEARCH SYMPOSIUM
LAB 204 FRIEDMAN BUILDING

GROUP 1 Gary Chan, Shaun Crowell, Karen Forsman, Sarah Hamanishi, Amy Zhuang
Validity and reliability of the Brief Fatigue Inventory and Dyspnea Inventory in individuals with COPD

GROUP 2 Jeffrey Brown, Joshua Havey, Eric Marriott, Derek Monkman, Fraser Perry
Lateral trunk lean and energy expenditure

GROUP 3 Jenny Bielger, Keri Fuchko, Erika Harder, Katie Hart
A comparison of feedback strategies to clinically modify gait in older adults with knee osteoarthritis

GROUP 4 Peter Francis, Sean Overin, Chelsea Rieu, Jennifer Woo
A systematic review of survey methodology in physical therapy research

GROUP 5 Brianna Cochrane, Alison Coffey, Shayla Hall, Brooke Hannela, Katelyn Weatherall
The effect of perioperative immune-nutrition in elective surgery patients: a systematic review

GROUP 6 Lindsay Farr, Brooke MacGillivary, Charlotte Mah, Andrea Neufeld
The quality of consumer health care information on the internet as assessed by healthcare experts using a defined frame and criteria

GROUP 7 Hanan Davidson, Silvana Doria, Robyn Elliott, Katherine Pauhl, Jennifer Scott
The validity of predictive equations that estimate peak oxygen uptake from 6 minute walk test values for patients with COPD

GROUP 8 Pieter Brautigam, Hussam Hakeem, Danielle Pontus, Vickrant Sanghera
The effectiveness of exercise intervention on lateral epicondylitis

GROUP 9 Ayli Berson, Heather Keep, Levana Luu
Validity of the handheld dynamometer compared to the gold-standard Biodex dynamometer in measuring peak hip extension strength

GROUP 10 Beth Bates, Sharaya Friesen, Neil Heron
Interprofessional virtual patient case development

GROUP 11 David Carter, Gilbert Park
Developing an educational tool on physical activity for previously incarcerated females

GROUP 12 Jem Arnold, Lara Brady, Connie Lee, Heather Leslie, Leo Willing
Building a virtual patient to teach evidence based practice

GROUP 13 Kelsey Grubb, Jamie Hartwell, Nicole Logan, Sarah Lowry, Amy Martens
Decision-making by PTs and OTs for the use of restorative or compensatory approaches for the treatment of the upper extremity following stroke

GROUP 14 Jenna Brown, Kristyn Harrington, Carly Lochbaum, Susan Moriarty, Scott Sevier
Neural correlates of parental recognition in infants

GROUP 15 Tyler LeGear, Mark LeGear, Dejan Preradovic, Geoff Wilson
Nintendo Wii and COPD

GROUP 17 Warren Nichols, Ashley Secrest, Karly Sutherland, Kelvin Yeung
Motor skill learning in relation to white matter integrity in stroke patients

GROUP 18 Alison Barr, Krista Clark, Lynn Dawson, Emily MacHattie, Natalie Sagle
Dimensions of feedback and its influence on physical therapy students' perception of the quality of their learning during clinical placement

GROUP 20 Regan Daoust, Sarah Jury, Kulwinder Kalan, Jessica Willemse
Is socialization a factor in how exercise promotes cognitive function in older adults? A systematic review

PHTH 572 POSTER PRESENTATION TIMES
AUGUST 8TH, 2013

09:25-09:30 **Welcome and Opening**, Jayne Garland, PhD, PT

09:30-10:00 **Group 20**
Title: Is socialization a factor in how exercise promotes cognitive function in older adults? A systematic review
Students: Regan Daoust, Sarah Jury, Kulwinder Kalan, Jessica Willemse
Supervisor: Teresa Liu Ambrose

09:30-10:00 **Group 1**
Title: Validity and reliability of the Brief Fatigue Inventory and Dyspnea Inventory in individuals with Chronic Obstructive Pulmonary Disease
Students: Gary Chan, Shaun Crowell, Karen Forsman, Sarah Hamanishi, Amy Zhuang
Supervisor: Darlene Reid

09:30-10:00 **Group 6**
Title: The quality of consumer health care information on the internet as assessed by healthcare experts using a defined frame and criteria
Students: Lindsay Farr, Brooke MacGillivary, Charlotte Mah, Andrea Neufeld
Supervisor: Darlene Redenbach

10:00-10:30 **Group 17**
Title: Motor skill learning in relation to white matter integrity in stroke patients
Students: Warren Nichols, Ashley Secrest, Karly Sutherland, Kelvin Yeung
Supervisor: Lara Boyd

10:00-10:30 **Group 5**
Title: The effect of perioperative immune-nutrition in elective surgery patients: a systematic review
Students: Brianna Cochrane, Alison Coffey, Shayla Hall, Brooke Hannela, Katelyn Weatherall
Supervisor: Elizabeth Dean

10:00-10:30 **Group 14**
Title: Neural correlates of parental recognition in infants
Students: Jenna Brown, Kristyn Harrington, Carly Lochbaum, Susan Moriarty, Scott Sevier
Supervisor: Naznin Virji-Babul

10:30-11:00 **Group 10**
Title: Interprofessional virtual patient case development
Students: Beth Bates, Sharaya Friesen, Neil Heron
Supervisors: Alison Greig and Diana Dawes

10:30-11:00 **Group 4**
Title: A systematic review of survey methodology in physical therapy research
Students: Peter Francis, Sean Overin, Chelsea Rieu, Jennifer Woo
Supervisor: Linda Li

10:30-11:00 **Group 9**
Title: Validity of the handheld dynamometer compared to the gold-standard Biodex dynamometer in measuring peak hip extension strength
Students: Ayli Berson, Heather Keep, Levana Luu
Supervisor: Jayne Garland

11:00-11:30 **Group 7**
Title: The validity of predictive equations that estimate peak oxygen uptake from 6 minute walk test values for patients with COPD
Students: Hanan Davidson, Silvana Doria, Robyn Elliott, Katherine Pauhl, Jennifer Scott
Supervisors: Kristin Campbell and Pat Camp

11:00-11:30 **Group 11**
Title: Research and rationale for the develop of an educational tool on physical activity for previously incarcerated females
Students: David Carter, Gilbert Park
Supervisors: Kristin Campbell and Diana Dawes

11:00-11:30 **Group 8**
Title: The effectiveness of exercise intervention on lateral epicondylitis
Students: Pieter Brautigam, Hussam Hakeem, Danielle Pontus, Vickrant Sanghera
Supervisor: Alex Scott

11:30-12:00 **Group 13**
Title: Decision-making by PTs and OTs for the use of restorative or compensatory approaches for the treatment of the upper extremity following stroke
Students: Kelsey Grubb, Jamie Hartwell, Nicole Logan, Sarah Lowry, Amy Martens
Supervisor: Janice Eng

11:30-12:00 **Group 18**
Title: Dimensions of feedback and its influence on physical therapy students' perception of the quality of their learning during clinical placement
Students: Alison Barr, Krista Clark, Lynn Dawson, Emily MacHattie, Natalie Sagle
Supervisor: Sue Murphy and Lesley Bainbridge

11:30-12:00 **Group 12**
Title: Building a virtual patient to teach evidence based practice
Students: Jem Arnold, Lara Brady, Connie Lee, Heather Leslie, Leo Willing
Supervisors: Alison Greig and Diana Dawes

12:00-12:30 **Group 3**
Title: A comparison of feedback strategies to clinically modify gait in older adults with knee osteoarthritis
Students: Jenny Bielger, Erika Harder, Katie Hart, Keri Fuchko
Supervisor: Michael Hunt

12:00-12:30 **Group 2**
Title: Lateral trunk lean and energy expenditure
Students: Jeffrey Brown, Joshua Havey, Eric Marriott, Derek Monkman, Fraser Perry
Supervisors: Michael Hunt and Kristin Campbell

12:00-12:30 **Group 15**
Title: Nintendo Wii and COPD
Students: Tyler LeGear, Mark LeGear, Dejan Preradovic, Geoff Wilson
Supervisor: Pat Camp

12:30-12:35 **Closing**

Group 1: **Validity and Reliability of the Brief Fatigue Inventory and Dyspnea Inventory in Individuals with Chronic Obstructive Pulmonary Disease**

Gary Chan, Shaun Crowell, Sarah Hamanishi, Karen Forsman, Amy Zhuang

Purpose and Rationale: This study investigates the test-retest reliability and validity of the Brief Fatigue Inventory (BFI) and Dyspnea Inventory (DI) in individuals with chronic obstructive pulmonary disease (COPD). Despite the high prevalence of COPD and significant symptom burden, no validated questionnaires assess the fatigue and dyspnea interference on activities of daily living in this population.

Relevance: These questionnaires will allow clinicians and researchers to evaluate symptom burden, while providing insight on disease limitations and encouraging more appropriate treatments.

Materials and Methods: Individuals with COPD aged 50 and older (n=26) were recruited from pulmonary rehabilitation programs at Vancouver General Hospital, Richmond Hospital, and from the Lung Centre at Vancouver General Hospital. Participants initially completed the BFI, DI, Chronic Respiratory Questionnaire (CRQ), then a follow-up BFI and DI one week later.

Analysis: Spearman's correlation coefficients were calculated to establish convergent validity of the BFI and DI against the CRQ. Intraclass Correlation Coefficient (ICC) was calculated to determine test-retest reliability of the BFI and DI

Results*:* The BFI and DI showed strong test-retest reliability in individuals with COPD (ICC=0.863, ICC=0.928 respectively). Dyspnea domain of the CRQ is negatively correlated with the DI magnitude (ρ=-0.758), DI interference score (ρ=-0.798) and DI total score (ρ=-0.827). Fatigue domain of the CRQ is negatively correlated with total BFI score (ρ=-0.828), BFI magnitude score (ρ=-0.748), and BFI interference score (ρ=-0.811).

Conclusion: The BFI and DI are validated and reliable options to consider when assessing and monitoring fatigue and dyspnea in individuals with COPD.

Group 2: Effect of Lateral Trunk Lean on Energy Expenditure in Adults with Knee Osteoarthritis

Jeffrey Brown, Joshua Havey, Eric Mariott, Derek Monkman, Fraser Perry

Objective: The purpose of this study was to examine the effect of a lateral trunk lean (LTL) gait modification on energy expenditure as measured by oxygen consumption.

Relevance: LTL gait modification has been shown to decrease the knee adduction moment during walking, but its affect on other body systems has not been examined.

Materials and Methods: This study used a randomized cross-over design to evaluate 12 adult subjects with knee osteoarthritis. The subjects completed two walking trials, a no trunk lean trial (NTL) and LTL trial, for 15 minutes each at a self-selected speed. The LTL gait modification was taught prior to trials and real-time biofeedback was used during both trials to achieve the desired degree of trunk lean. Oxygen consumption was measured continuously during both trials, as were measures of pain, heart rate (HR), RPE, metabolic equivalents (METS) and degrees of trunk lean.

Analysis: Differences in outcome measures between the two conditions were calculated using paired-T test. A difference was deemed significant if $p < 0.05$.

Results: The LTL trial showed a significant increase in relative VO_2 compared to the NTL trial (p=0.002). Significant increases were also seen in the LTL trial in HR (p=0.008), METS (p=0.002), and RPE (p=0.001). No differences were seen in pain between the two conditions (p=0.22).

Conclusion: A gait pattern with a lateral trunk lean of 10 degrees significantly increases metabolic demand during a 15 minute walking trial. More research is needed to investigate the feasibility of implementing the LTL gait modification clinically.

Group 3: A Comparison of Feedback Strategies to Clinically Modify Gait in Older Adults with Knee Osteoarthritis

Jenny Bielger, Keri Fuchko, Erika Harder, Katie Hart

Purpose & Objectives: Real-time biofeedback is an effective tool in modifying gait. Most rehabilitation settings do not have the resources to implement real-time motion-capture systems. The aim of this study was to evaluate the effectiveness of two clinically feasible feedback strategies in comparison to real-time biofeedback for gait modification in older adults with knee osteoarthritis.

Relevance: Physiotherapists require a clinically feasible tool to modify gait.

Design: A within-group, repeated-measures study design with randomization of three feedback conditions – real-time biofeedback, mirror, and video.

Materials & Methods: A target foot progression angle (FPA) of 10° greater than a self-selected angle was determined for 20 subjects with knee osteoarthritis. Feedback on FPA was provided to subjects by the three randomized conditions. FPA error was calculated for each feedback condition to evaluate effectiveness to modify gait.

Analysis: A two-way ANOVA of the average FPA error of the three feedback conditions was performed. A Tukey post-hoc test was used to determine significance between feedback conditions. A chi-square test was used to determine differences between patients' preference and difficulty ratings for each condition.

Results: Real-time biofeedback was significantly more effective at modifying gait than mirror and video feedback ($p<0.05$). No significant difference was found between the three conditions for participants' subjective ratings of difficulty or preference ($p>0.05$).

Conclusion: Although the FPA error of the mirror and video feedback conditions was significantly different than real-time biofeedback, the amount of FPA error found for mirror and video may be suitable for gait modification training in a clinical setting.

Group 4: A Systematic Review of Survey Design Methodology Within Physical Therapy Research

Peter Francis, Sean Overin, Chelsea Rieu, Jennifer Woo

Purpose: Surveys are commonly used in research to extract opinions and practice trends of health care professionals. Low response rates pose a significant limitation to surveys as it restricts the generalizability, reliability and validity of extracted data. The Dillman Tailored Design Method (TaDM) is a survey methodology that guarantees an 85% response rate but is costly and time-consuming. Therefore, this review investigates the current use of TaDM components in surveys of physical therapists and evaluate their impact on response rate.

Methods: CINAHL, MEDLINE and Embase were searched for relevant articles. Retrieved articles were screened for inclusion then data were extracted for statistical analysis to examine the presence of any relationships between TaDM components and reported response rates.

Results: 189 eligible studies were identified from 649 retrieved articles. 18.2% of studies reported a response rate ≥80% with a mean reported response rate of 63.5%. No significant correlation was found between the reported response rate and the number of TaDM components used. Year of publication was positively correlated with prepaid first class postage, ethics board approval, provision of additional survey to non-responders and reminders but negatively correlated with the RR and type of organization.

Conclusions: A positive correlation was found between the year of publication and the number of TaDM components used, suggesting diffusion of innovation in survey design methodology among physical therapy researchers. The majority of surveys underreported their survey methodology, thus making it difficult to ascertain the correlation between the application of TaDM and response rates in physical therapy research.

Group 5: A Systematic Review of the Effects of Perioperative Immunonutrition in Elective Surgery Patients

Brianna Cochrane, Alison Coffey, Shayla Hall, Brooke Hannela, Katelyn Weatherall

Background: Many immuno-nutrient supplements available claim to create optimal post-operative outcomes. Despite extensive literature on the subject, results between trials are inconclusive. The purpose of this systematic review is to investigate the effects of perioperative immuno-nutrient supplementation on adults undergoing elective surgery.

Relevance: Physical therapists are responsible for improving in---patient mobility after surgery. Recommendations and guidelines that optimize post---operative outcomes will allow earlier mobilization and increase success of physical therapy interventions.

Materials and Methods: Medline, CINAHL, CENTRAL and EMBASE databases were searched from September 2007 to September 2012. Randomized clinical trials in English, investigating clinical outcomes of perioperative immuno-nutrient supplementation in adults undergoing elective surgery were included.

Analysis: Methodological quality was evaluated using The Cochrane Collaboration's tool for assessing risk of bias across six domains. Data on study characteristics, types of immuno-nutrients, modes of delivery and clinical outcomes are presented. Meta---analysis could not be performed due to heterogenous data.

Results: Search strategy yielded 17 papers, with none having a "low risk" of bias in all six domains. Perioperative immuno-nutrition was not associated with significant reductions in postoperative infections. Four studies found a significant decrease in hospital length of stay and two studies found statistically significant reductions in post---operative complications, both in the group receiving immuno-nutrient supplementation.

Conclusions: A review of the literature shows no trend suggesting difference in clinical outcomes for patients receiving immuno-nutrition. However, lack of quality controlled trials and homogenous data are indicative of a need for additional higher quality studies in this area

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Group 6: The quality of consumer health information on the Internet as assessed by experts using defined criteria: A systemic review

Lindsay Farr, Brooke MacGillivary, Charlotte Mah, Andrea Neufeld

Objective: To systematically review the current research examining the quality of consumer health information on the Internet and compare these results with those found by Eysenbach et al. (2002).

Importance: The Internet is a common medium for the public to search for health information. Its rapid growth and increase in accessibility makes it difficult to regulate the quality of Internet content. Inaccurate or misleading information could be detrimental to an individual's health. Physiotherapists provide patient education, therefore must be aware of the current quality of the websites patients may access.

Evidence Review: MEDLINE, EMBASE, CINAHL, PsycINFO, and Compendex were systematically searched for English articles that evaluated the quality of consumer health information on the Internet, and reported quantitative results. Hand searches and grey literature searches were also conducted. Two reviewers independently extracted study characteristics, criteria of quality, results, and quality of methods.

Findings: The search strategy yielded 67 articles, of these 53.7% of the articles determined that quality was a problem, 37.3% of the articles were neutral and only 10.4% reported positive quality. Articles reporting positive quality used less assessment tools and had a higher occurrence of self-made tools. The most common tools cited were DISCERN and Flesch-Kincaid/Flesch Reading Ease.

Conclusions: Making comparison across studies was difficult due to the variability in study design and methods. The results indicate that although quality of consumer health information on the Internet has improved since 2002, it continues to be problematic. Future research is needed to improve quality control and evaluation of consumer health information.

Group 7: The validity of predictive equations that estimate peak oxygen uptake and peak work rate from 6-minute walk test values for patients with COPD

Hanan Davidson, Silvana Doria, Robyn Elliott, Katherine Pauhl, Jennifer Scott

Purpose: Accurate assessment of aerobic capacity in COPD patients is valuable to clinicians prescribing exercise. Maximal aerobic testing to determine exercise capacity for this purpose is not always feasible. Consequently, various equations to predict maximal aerobic capacity and peak work rate are currently being evaluated in the literature.

Relevance: This study determined the validity of 11 predictive equations that use six minute walk distance or work to predict peak oxygen consumption (VO_{2peak}) and peak work rate ($Work_{peak}$) in a COPD population. Recommendations were made regarding the usefulness of the equations to prescribe exercise in clinical settings.

Materials and Methods: This retrospective chart review utilized data collected from 42 patients who had participated in a pulmonary rehabilitation program. Cardiopulmonary Exercise Test (CPX) and Six Minute Walk Test (6MWT) data was collected from patient charts. Predictive equations for VO_{2peak} and $Work_{peak}$ were identified from a systematic literature review.

Analysis: Intraclass correlation coefficients (ICC's) were calculated and Bland Altman plots generated to determine agreement between measured and predicted values of VO_{2peak} and $Work_{peak}$.

Results: Agreement between predicted and measured values was poor. The equations generally over or underestimated peak values for oxygen consumption and work rate. Statistical analysis revealed a trend towards increased ICC values for equations predicting $Work_{peak}$ over those predicting VO_{2peak}.

Conclusions: Our data suggests that predictive equations are not valid in predicting VO_{2peak} or $Work_{peak}$, consistent with current findings in the literature. These equations may not be useful in the prescription of exercise in a COPD population.

Group 8: The effectiveness of exercise intervention on lateral epicondylalgia

Pieter Brautigam, Hussam Hakeem, Danielle Pontus, Vickrant Sanghera

Objectives: Previous systematic reviews examined exercise as part of multi-modal treatment programs for lateral epicondylalgia (LE). This systematic review assessed the effectiveness of exercise as a stand-alone treatment in order to determine the benefits of exercise compared to other interventions, as well as the overall effect of exercise on pain and function.

Relevance: LE is a common tendinopathy with an annual incidence of 1% to 3% in the general population. Physiotherapists are the primary practitioners treating this condition.

Materials and Methods: Electronic databases were searched from 1985 to present using relevant keywords, resulting in 243 articles being identified. Following de-duplication and screening of titles, 80 articles remained. Using two independent reviewers, abstract and full text readings were completed, and eight randomized controlled trials (RCTs) were found to meet selection criteria.

Analysis: Articles were appraised for quality using the PEDro tool and given a score out of eleven (with a score $\geq$ 6/11 considered as high quality). Data pertaining to study samples, interventions, and outcomes for pain and function were extracted.

Results: All articles reviewed achieved a high quality rating with the mean quality rating being 78.4%. All articles used pain as an outcome measure with seven of these articles also using grip strength. Across all articles exercise proved to be an effective means of achieving positive outcome measures, but variation was present regarding whether or not exercise provided a significant difference in improvement.

Conclusion: Exercise can reduce pain and increase grip strength when used as an isolated treatment for lateral epicondylalgia. There is insufficient evidence to determine determine if it has a greater effect than other interventions.

Group 9: Validity of the handheld dynamometer compared to the gold-standard Biodex dynamometer in measuring peak hip extension strength

Ayli Berson, Heather Keep, Levana Luu

Purpose/Objectives & Rationale: Handheld dynamometers (HHD) are used to obtain objective measures of muscle strength clinically and in research, despite limited studies on its validity. The objective of this study is to evaluate the validity of the HHD in measuring peak hip extension torque compared to the gold-standard Biodex dynamometer and the validity of taking single- versus multi-trial measures.

Relevance: Muscle imbalances at the hip have been linked to a variety of musculoskeletal conditions. To objectively assess these imbalances, a valid, cost-effective means of measuring strength is needed.

Materials & Methods: A convenience sample of 20 healthy adults was recruited. Peak hip extension strength measures were collected in a prone standing position for the HHD and Biodex. The standardized supine position on the Biodex was also used as a comparison.

Analysis: A regression analysis was used to compare HHD, Biodex Prone and Biodex Supine peak torque measures for criterion validity. A post-hoc paired t-test was completed to determine the validity of first trial versus average measures.

Results: The r values were 0.37* ($p \leq 0.05$) for HHD vs. Biodex Prone Standing, r=0.51* ($p \leq 0.0001$) for HHD vs. Biodex Supine and r=0.55* ($p \leq 0.0001$) for Biodex Prone Standing vs. Supine. There were no significant differences between values obtained in a single- versus multi-trial measure ($p > 0.05$).

Conclusions: The HHD in the prone standing position has predictive validity in measuring peak hip extension strength in healthy adults aged 20-64 There are no significant differences between first versus average trial measures suggesting single trial measures with the HHD may be clinically appropriate.

Group 10: Interprofessional Virtual Patient Case Authoring and Editing

Beth Bates, Sharaya Friesen, Neil Heron

Purpose & Objectives: Virtual patients (VP) are a method in which learners can be exposed to interprofessional patient care to fill an educational need. Therefore, the aim of this research project was (1) to author two storyboards for two modules of a VP case based on guidelines from the Interprofessional Virtual Patient (IPVP) framework adapted from ©W(e) Learn model, (2) to design a case that will educate entry-level physical therapy and medical students about interprofessional collaborative patient care, (3) to edit the case using recommendations from a panel of experts' review of the two storyboards and (4) to develop an electronic first draft of each module.

Relevance: Exposure to interprofessional healthcare environments is a requirement for safe and effective patient care. A lack of interprofessional cooperation and effective communication among healthcare professionals prevents ideal practice and patient outcomes (4,12,13). On-line learning has been shown to be useful in teaching students about IP collaboration and its development of collaborative healthcare practitioners (6,15).

Analysis: The VP case storyboards were evaluated for real-world accuracy, entry-level content and interprofessional quality by an expert panel composed of a medical doctor, three physical therapists and a virtual patient developer. The evaluations took place during multiple in person meetings with a minimum 4 out of the 6 experts present.

Results: Two completed storyboards for two educational modules of an interprofessional virtual patient case designed to take 30-40 minute to complete. Module one covers the management of a military member (patient) with a medial ankle sprain and module two follows the member as they later develop a complication, tibialis posterior tendinopathy. The case focuses on the interprofessional collaboration between a Physical Therapist and a Medical Officer (Family Practice Doctor). In the process of being developed are the electronic drafts of each module from the storyboard templates.

Conclusions: Using an expert panel to review and make recommendations to VP case storyboards can be used by future VP designers to create a case based on the opinions of interprofessional experts.

Group 11: Developing an educational tool on physical activity for previously incarcerated females

David Carter, Gilbert Park

This paper aimed to develop an educational tool that promotes physical activity (PA), improves health literacy, and increases self-efficacy in previously incarcerated females in Canada. A general literature review was conducted on the following topics: teaching methodology, adult learning, effective presentation styles and the needs of incarcerated and marginalized females. The review was done by physiotherapists and an educational tool was created. It was found that an interactive PowerPoint presentation delivered by physiotherapists upon release from jail was the most logistically feasible and the most likely to succeed in the short term. The educational tool used the Theory of Planned Behavior to guide behavioral change. Adult learning principles and the principles used to guide health education development, amongst previously incarcerated females, were used. We believe that physiotherapists possess the knowledge and expertise on PA and are well-positioned to provide effective education on the benefits of PA. The four main goals of the educational tool were as follows:

1. Engaging participants with interactive tools and group participation
2. Improve physical activity literacy of previously incarcerated females
3. Encourage peer interaction
4. Address barriers to physical activity

The intention of this project was to lay the foundation for a more comprehensive project, in which the educational tool could be further studied, developed, and then employed for use with previously incarcerated females.

Group 12: Creating a virtual patient to teach evidence based practice.

Jem Arnold, Lara Brady, Connie Lee, Heather Leslie, Leo Willing

Purpose/Objectives/Rationale: To create a virtual patient (VP) case to teach physiotherapy students and experienced physiotherapists (PTs) evidence based practice (EBP). At present EBP is rarely incorporated into clinical practice with practitioners reporting a lack of confidence in their skills to find, appraise, and integrate evidence into practice. VP cases are effective tools to teach clinical reasoning skills, such as EBP.

Relevance: PTs must be proficient at EBP to provide clients with the safest, highest quality care based on the highest level of evidence, but many PTs do not know how to effectively perform EBP.

Materials and Methods: A VP case decision making framework was created based on a literature search and synthesis and was applied to a 5-step model for performing EBP. The programs Vue and Articulate were used to storyboard and produce the modules.

Analysis: The VP case was evaluated for validity and feasibility by experts in VP production and EBP education. The modules were matched to the decision making framework and EBP 5-step model to ensure accuracy and completeness.

Results: Modules 1 “Defining the question”, 2 “Searching the Literature”, and 3 “Appraising the Evidence” are ready for early evaluation. The VP case decision making framework can be used to guide further development.

Conclusions: Modules 1-3 of a 5-module VP case to teach EBP were created based on a VP case decision making framework and a 5-step model for performing EBP. With the completion of modules 4 and 5, the modules must be tested for ability to improve student and practitioner confidence in performing EBP and feasibility for incorporation into practice.

Group 13: Decision-making by PTs and OTs for the use of restorative or compensatory approaches for the treatment of the upper extremity following stroke

Kelsey Grubb, Jamie Hartwell, Nicole Logan, Sarah Lowry, Amy Martens

Purpose & Objectives: There are no studies investigating factors contributing to a Physical Therapist's (PT) or Occupational Therapist's (OT) decision to choose a compensatory treatment or restorative treatment approach when treating the upper extremity (UE) following stroke. This study aimed to explore factors influencing a therapist's decision-making process when treating UE impairments following stroke by examining clinical thresholds.

Relevance: This study can inform therapists of current clinical practices for UE treatment following stroke. A study of this nature could act as a starting point for a larger investigation into the most common factors and corresponding clinical thresholds affecting the choice of treatment.

Materials & Methods: Online cross-sectional survey distributed to PTs and OTs (*n*=98) in British Columbia, Canada, whose caseload had the potential to include stroke patients.

Analysis: Quantitative data (count, mean, SD) and qualitative data (theme selection and respondent quotations) extracted from an online survey host.

Results: Valid response rate of 54% (n=53) was obtained. The majority of respondents were PTs (>75%). The respondents were from a variety of clinical settings with a mean 11.0 ± 7.3 years of experience. The most agreed upon factors influencing treatment approach were "knowledge of best practice" (46 of 53), "patient preference" (45 of 53), "pre-stroke function" (44 of 53), "rate of recovery" (42 of 53), "cognition" (42 of 53), and "time since stroke" (42 of 53).

Conclusions: Forty-six of 53 respondents agreed that "knowledge of best practice" influenced their choice in treatment approach, which encourages future research for use in clinical practice.

Group 14: Neural correlates of parental facial recognition in an adult, a typically developing infant and an infant with Down Syndrome: A case study

Jenna Brown, Kristyn Harrington, Carly Lochbaum, Susan Moriarty, Scott Sevier

Purpose & Rationale: This case study investigated a basic component of socialization: the ability to recognize one's parents. Comparison between an adult, a typically developing infant, and an infant with Down Syndrome (DS) was conducted using electroencephalography (EEG) to evaluate facial recognition of mother and father. Parent-child interactions during infancy are instrumental for social functioning later in life and individuals with DS have been shown to lack the skills to interact meaningfully. Previous research has focused on an infant's ability to recognize their mother, and there is no existing research on facial recognition in infants with DS.

Relevance: Early intervention programs designed to facilitate parent-child relationships and promote social development require evidence to shape their design.

Materials and Methods: Using EEG event-related potentials (ERPs) were recorded while subjects observed randomized presentation of parental and stranger faces.

Results: Adult and typically developing infant subjects demonstrated greatest peak EEG activity and shortest latency when viewing images of their mother. Response to the father's face in these subjects was less pronounced than the response to mother. The infant with DS did not display any significant ERP response.

Conclusions: There may be a difference in visual recognition between mother and father in infants. Further investigation is required to determine potential significance and implications. The methodology used for typically developing infants may be not effective for eliciting ERP's in response to visual stimuli in infants

Group 15: **Does a Nintendo Wii exercise program provide the same cardiovascular demand as a traditional pulmonary rehabilitation program in adults with COPD?**

Mark LeGear, Tyler LeGear, Dejan Preradovic, Geoff Wilson

Purpose/Objectives & Rationale: Pulmonary rehabilitation programs reduce the risk of hospital admissions, decrease mortality, and improve quality of life in patients with chronic obstructive pulmonary disease (COPD). Accessibility is limited and adherence declines after completion. The primary objective compared energy expenditure in COPD patients of a traditional pulmonary rehabilitation program to a Wii-based program. The secondary objective evaluated patient's enjoyment.

Relevance: Nintendo Wii has been used in various clinical populations and may be an effective tool for COPD treatment.

Materials and Methods: Ten patients with COPD participated in a within subjects, randomized cross-over design study. Accelerometry was used to measure energy expenditure during Wii and Treadmill Interventions. Likert questionnaires were completed after each intervention to assess patients' enjoyment.

Analysis: Differences of means of each intervention were analyzed with paired t-tests (alpha=0.05).

Results: There was no significant difference between total energy expenditure in the two 15-minute exercise interventions (MD 36.3, 95% CI -31.4 to 104). There was no significant difference in heart rate (MD -0.167, 95% CI -4.83 to 4.50), RPE (MD 0.100, 95% CI -0.416 to 0.616) and Borg Dyspnea (MD 0.267 , 95% CI -0.00405 to 0.537) between the two 15-minute exercise interventions . There was a significant difference in Sp02 between the two 15-minute exercise interventions (MD 2.33, 95% CI 1.52 to 3.15).

Conclusion: The Nintendo Wii console can be used to create an exercise program that has similar cardiovascular demand to traditional pulmonary rehabilitation programs for patients with COPD. Further research is necessary to address issues of feasibility and long-term adherence.

Group 17: Examining Motor Skill Learning and the Relationship of White Matter Characteristics in Individuals with Chronic Stroke Using Diffusion Tensor Imaging

Warren Nicholls, Ashley Secrest, Karly Sutherland, Kelvin Yeung

Background: Diffusion Tensor Imaging (DTI) has been used to assess damage to the brain after a stroke by measuring the fractional anisotropy (FA) values of white matter tracts. FA values can provide insight into an individual's capacity for recovery post stroke. It was hypothesized that stroke patients with greater FA values in the posterior limb of the internal capsule (PLIC) as determined by DTI would show a greater ability to learn a novel motor task than those with lower values.

Methods: Thirteen participants with chronic stroke and nine age-matched healthy controls practiced a visuomotor pursuit task across seven sessions. Change in motor behavior associated with learning was indexed by comparing baseline performance with a delayed retention test. FA was the primary DTI-derived outcome measure.

Results: An association was observed between ipsilesional PLIC FA and the magnitude of change associated with motor learning in individuals with chronic stroke; hierarchical multiple linear regression analyses revealed that the combination of age, time post stroke and ipsilesional PLIC FA was associated with motor learning related change (R2=.649, p=0.02).

Conclusions: Participants with stroke showed significant improvement in their performance of the task, regardless of their PLIC FA values. However, those with greater FA values demonstrated a greater amount of improvement in the task than those with lower FA values. These findings support the use of PLIC FA values in conjunction with other variables, as a prognostic indicator for individuals with stroke.

Group 18: The influence of feedback on physical therapy students' perception of learning during clinical placements

Alison Barr, Krista Clark, Lynn Dawson, Emily MacHattie, Natalie Sagle

Purpose/Objectives & Rationale: The aim of this study is to further the understanding of how the various dimensions of feedback affect students' perception of the quality of their learning experience. Feedback is an important component contributing to learning in clinical placements. Although there are studies investigating feedback in clinical placements in other healthcare professions, there is little research on feedback for physical therapy students.

Relevance: Feedback received during clinical placements is an integral part of a physiotherapy students' education. The modifiable nature of feedback creates an opportunity to guide preceptor education, thereby enhancing student learning.

Material & Methods: Data was collected from three, 30 minute, semi-structured focus groups. Twenty-two participants, recruited from the UBC MPT 2011 - 2013 cohort mailing list, attended the groups. Major themes and sub-themes were extracted and discussed.

Analysis: Content thematic analysis was used to generate major themes and sub-themes from the transcribed focus group sessions.

Results: Three dimensions of feedback - namely timing, type and context - were identified by participants as important elements that impacted their learning. Students preferred a combination of the various types, timing and context of feedback, a preference that was often task dependent.

Conclusions: This research has revealed aspects of feedback perceived as valuable in contributing to student learning while on clinical placement. Students identified that high quality feedback provided more positive placement experiences and was found to facilitate greater learning opportunities.

Group 20: Is socialization a factor in how exercise promotes cognitive function in older adults? A systematic review

Regan Daoust, Sarah Jury, Kulwinder Kalan, Jessica Willemse

Purpose/Objectives & Rationale: Socialization and exercise have been shown to positively affect cognitive function in the elderly as separate interventions. This review investigated whether the socialization aspect of group-based exercise interventions has greater effect on cognitive function in the elderly when compared to individual-based exercise interventions.

Relevance: To date, no research has been found comparing the cognitive effects of group- versus individual-based exercise programs. Results of this review could be used to guide future research and treatment protocols.

Materials and Methods: Systematic review of randomized controlled trails that evaluated changes in cognitive status following an exercise regime in adults aged 65 years or older. A search of MEDLINE, EMBASE, CINAHL, and PsycINFO databases identified 22 studies meeting inclusion criteria. Insufficient between- and within-group data existed for meta-analysis so a qualitative analysis was performed.

Analysis: Study results were separated into group- and individual-based protocols, and were examined separately for trends in their effect on cognitive outcome measures. Intervention type, protocol, adherence, duration, and study quality were considered as potential confounding variables.

Results: 71% of 17 group-based RCTs, and 40% of five individual-based protocols reported a significant improvement in one or more cognitive domains. Trends were found supporting the hypothesis that group-based exercise imparts a greater positive effect on cognitive function than individual-based exercise.

Conclusions: Group-based exercise appears to have a larger positive effect on cognitive function in the elderly when compared with individual-based exercise. However, due to the limited sample size, current results are statistically inconclusive and future research is needed.