

**New Brunswick Kinesiology Association
Association de Kinésiologie du Nouveau-Brunswick**



Conférence Annuelle et AGA

2019

Annual Conference and AGM

**Samedi
Le 5 Octobre
Hébergée à:**

**Saturday
October 5th
Hosted at:**

**The University of New Brunswick, Fredericton
Kinesiology Building**

PROGRAMME / PROGRAM

BIENVENUE DE LA PART DU CONSEIL D'ADMINISTRATION DE L'AKNB
WELCOME FROM THE NBKA BOARD OF DIRECTORS

Bienvenue à la conférence annuelle 2019 de l'AKNB. Cette année la conférence abordera un thème qui a pour but de rassembler nos membres afin de développer la profession de kinésologue au Nouveau-Brunswick et notre futur en tant qu'association. C'est donc dans cette optique que l'AKNB a invité trois conférenciers qui amèneront notre association à faire une introspection sur l'avenir de la kinésiologie au Nouveau-Brunswick et à l'accroissement de notre association dans le but d'accomplir sa mission.

Nous souhaitons aussi vous inviter à prendre le temps d'aller voir le concours par affiche. L'ajout de cette section à notre conférence a pour but de donner l'opportunité aux étudiants de présenter leurs travaux de recherche en cours dans le domaine de la kinésiologie et à nos membres, de prendre connaissance des nouveautés en recherche en kinésiologie dans nos universités du Nouveau-Brunswick.

Pour terminer notre AGA se tiendra encore une fois cette année sur l'heure du dîner et nous espérons grandement que nos membres pourront se joindre à nous afin de contribuer à l'avancement de notre association.

Nous espérons que vous apprécierez cet événement et nous vous souhaitons une belle journée.

Kendra Cooling, Présidente
Au nom des membres du conseil d'administration de l'AKNB

Welcome to the 2019 NBKA Annual conference. This year the conference will address a theme that brings our members together to develop the kinesiology profession in New Brunswick and our future as an association. With this in mind, the NBKA has invited three speakers who will lead our association to reflect on the future of kinesiology in New Brunswick and to the expansion of our association in order to accomplish our mission.

We wish to invite you to take the time to look over our poster presentations. This new addition to the conference aims to give students time to present their posters to kinesiologists, peers, faculty members, and other experts in the field and to our members to learn about all the new research development in the New Brunswick universities.

Once again this year, the AGM will be held at lunch time during the conference and we hope for our members to attend and to contribute to the advancement of our association.

We hope that you will appreciate this event and wish you all a great day,

Kendra Cooling, President,
On behalf of the NBKA Board of Directors

HORAIRE DE LA CONFÉRENCE CONFERENCE AGENDA

- 8:00 AM** Inscription / Registration
- 8:30 AM** Mot d'ouverture / Opening Remarks
- 8:45 AM** Conférencier 1 / Speaker 1

Serge Bourdeau
- 10:00 AM** Pause et Compétition par affiche / Break and Poster Competition
- 11:30 AM** Dîner et AGA / Lunch and AGM
- 1:00 PM** Conférencier 2 / Speaker 2

Travis Saunders
- 2:00 PM** Pause / Break
- 2:15 PM** Conférencière 3 / Speaker 3

Vicky Bouffard-Levasseur
- 3:15 PM** Annonce des récipiendaires du concours par affiche et de la bourse étudiante de l'AKNB /
Announcement of award recipients for the bursary and poster competition
- 3:45 PM** Fin de la conference / Closing remarks

CONFÉRENCIERS INVITÉS

GUEST SPEAKERS

SERGE BOURDEAU

Président de la FKQ / President of the FKQ

Notre premier conférencier, Serge Bourdeau, président de la Fédération des Kinésiologues du Québec, présentera sur les défis et le cheminement de la FKQ dans son périple vers un encadrement de la profession de kinésologue au Québec, un travail qui a commencé il y a maintenant plus de 22 ans.

La fédération des Kinésiologues du Québec est sans aucun doute l'une des associations provinciales de Kinésiologie les plus dynamiques au Canada. L'AKNB et ses membres pourront certainement tirer des avantages de cette présentation toujours dans le but d'atteindre ses objectifs vers la réalisation de sa mission. Monsieur Bourdeau pourra, nous l'espérons, nous donner matière à discuter lors de notre AGA qui suivra sur l'heure du dîner.

Our first speaker, Serge Bourdeau, Head of the Fédération des Kinésiologues du Québec, will present on the challenges and path of the FKQ in its journey to obtain a professional order. This ongoing process has started more than 22 years ago.

The FKQ is one of the most dynamic provincial kinesiology associations in Canada. The NBKA and its members will certainly benefit from this presentation in the realisation of its mission. We look forward to the insights into the process that Mr. Bourdeau will share. This will give us some interesting material to discuss at our AGM that will follow.

TRAVIS SAUNDERS

Professeur adjoint en kinésiologie à UPEI/ Assistant professor in kinesiology at UPEI

Travis Saunders a gradué de l'Université de Ottawa avec un doctorat en sciences de l'activité physique. Sa thèse portait sur la relation entre le temps de sédentarité et la santé métabolique chez les enfants et les jeunes. Il a aussi joué un rôle déterminant dans l'établissement du réseau de recherche sur les comportements sédentaires (<https://www.sedentarybehaviour.org/>). Suite à son doctorat, il a reçu une bourse post doctorale de La Fondation des maladies du cœur et de l'AVC afin de poursuivre sa formation à l'Université de Dalhousie à Halifax. Depuis 2014, il est professeur titulaire en kinésiologie à UPEI et est impliqué dans une variété de projets de recherche. Son but est de développer un style de vie et des interventions de santé publique diminuant l'impact des comportements sédentaires sur la santé chez les enfants et les adultes. Récemment, Travis a aidé à mettre sur pied KIN PEI qui a déjà complété sa première année comme association provinciale de kinésiologie. En tant que conférencier invité, Travis présentera sur l'année bien remplie qu'ils ont eue comme association et les leçons qu'ils ont pu en tirer.

Travis Saunders graduated from the University of Ottawa with a Ph.D. in Human Kinetics. His thesis was on the relationship between sedentary time and metabolic health in children and youth. He was instrumental in establishing the sedentary behaviours research network (<https://www.sedentarybehaviour.org/>). He received a Post-doctoral Fellowship from the Heart and Stroke Foundation of Canada to continue his training at Dalhousie University in Halifax. Since 2014 he is an assistant professor in kinesiology at UPEI and is involved in a variety of research projects. His goal is to develop lifestyle and public health interventions which reduce the health impact of sedentary behaviour in both children and adults.

Recently, Travis has helped establish KIN PEI, and they have already achieved the milestone of their first year as a provincial kinesiology association.

As part of the conference, Travis will present on the busy first year they've had and the lessons they've learned.

CONFÉRENCIERS INVITÉS GUEST SPEAKERS

VICKY BOUFFARD LEVASSEUR

Professeur agrégée en kinésiologie au campus d'Edmundston / Associate professor in kinesiology at UdeM, campus d'Edmundston

Vicky Bouffard-Levasseur est détentrice d'un doctorat en sciences de l'activité physique de l'Université de Montréal, plus précisément en biomécanique où elle a graduée en avril 2012. Sa thèse portait sur l'évaluation de la locomotion chez des patients qui ont subi une arthroplastie de la hanche. Depuis août 2011, Vicky enseigne la kinésiologie au premier cycle à l'université de Moncton au campus d'Edmundston. En plus d'être professeur agrégée, Vicky travaille comme kinésologue en réadaptation musculosquelettique à la clinique R-GO DGL et au Sparta Progression Gym à Edmundston.

Vicky partagera avec nous, lors de la conférence, la manière dont elle réussit, grâce à différents projets de recherche, à transmettre ses connaissances comme kinésologue certifiée tout en ayant un impact positif sur la communauté.

Vicky Bouffard-Levasseur graduated with a PhD from the physical activity science program, biomechanics option, from the University of Montreal in April 2012. Her thesis was on gait analysis of patients undergoing hip arthroplasty. She is currently at a professor at the University of Moncton, Edmundston campus where she teaches and performs research in kinesiology. Prof. Bouffard-Levasseur also works as a kinesiologist in musculoskeletal rehabilitation at the R-GO DGL clinic and at Sparta Progression Gym in Edmundston.

Vicky will share with us during the conference how she uses the information gained from her research and teaching to transmit her knowledge as a kinesiologist while having a positive impact in the community.

COMPÉTITION PAR AFFICHE - RÉPERTOIRE ET RÉSUMÉS
POSTER COMPETITION - LISTING AND ABSTRACTS

Baccalauréat / Undergraduate

Yanis Saheb	Bénéfices de l'activité physique sur le cancer au niveau du traitement et de la thérapie.
Tamika Bergeron	Contrôle de l'équilibre et de la vitesse de marche chez les personnes âgées
Emily Whitcomb	Systematic review and meta-analysis of randomised controlled trials comparing face-to-face vs remote behaviour change interventions for weight management in adults carrying excess weight
Emmanuel Zangio	Investigating Achilles, fibularis longus and tibialis anterior tendon vibration during balance control in adults with and without recurrent ankle sprain
Céline Desaulniers	An exercise program adapted for chronic diseases in a rural community: the execo program

Maîtrise / Master

Molly Gallibois	The association between frailty status and sedentary behaviour for long-term care residents
Marcus Lees	Inactive older adults exercising at home without specialized equipment: An exploratory case study on program feasibility
Hilary Pond	Does Dynamic Strength Index Correlate with Force Velocity Profile in High Performance Varsity Athletes
Courtnei Soucy	Variability in physical function improvements for patients living with breast cancer during a 12-week exercise program
Benjamin Colpitts	Changes in Resting Metabolic Rate, Metabolic Flexibility, and Glucose Tolerance following Sprint Interval Training in Adults living with Obesity

Doctorat / Doctoral

Travis Hrubeniuk	The ability of exercise to meaningfully improve glucose tolerance in people living with prediabetes: a meta-analysis
Mohammad Keshavarz	Can a resistance training reach the optimal intensity without specialized equipment for Men living with obesity? Pillar social, cultural, environmental and population health

BÉNÉFICES DE L'ACTIVITÉ PHYSIQUE SUR LE CANCER AU NIVEAU DU TRAITEMENT ET DE LA THÉRAPIE

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Introduction: Trente pourcents des taux de décès au Canada sont provoqués par le cancer. En 2017, 200 000 nouveaux cas de cancer ont été recensés (ASPC, 2019). Rares sont ceux qui instaurent des programmes d'activité physique dans leur processus de guérison (Stubblefield, 2017). Ce projet reviendra sur les différents bienfaits de l'exercice physique sur le cancer et leurs impacts sur la guérison ainsi que sur la thérapie chez les patients.

Méthodologie: Les aspects bénéfiques de l'activité physique chez les patients atteints du cancer est un sujet global qui peut englober plusieurs articles de recherche. Dans PubMed, les sujets indexés contiennent des sous-descripteurs. Le terme utilisé dans PubMed pour décrire le cancer est « Neoplasms » et nous avons effectué une recherche pour « Neoplasms » avec le sous-descripteur « Prevention and control ». Une grande partie des articles repérés avec cette recherche abordent les bénéfices de l'activité physique avant ET après que les patients aient été atteints du cancer. Étant donné que ce sujet ressort plusieurs articles, nous étions en mesure de repérer 42 articles en limitant notre recherche aux cinq dernières années, en anglais et français, et uniquement des revues de littératures, revues systématiques, et méta-analyse.

Résultats: Notre recension des écrits a ressorti des effets thérapeutiques de l'activité physique sur le cancer : diminution de la fatigue, de la dépression ainsi que des effets secondaires provoqués par le cancer jumelée à une amélioration de la qualité de vie et de la condition physique (endurance aérobie et anaérobie, force musculaire, flexibilité et équilibre). De plus, il a été possible de ressortir des effets sur le traitement du cancer, tels que des diminutions de risques de propagation du cancer grâce notamment aux variations de niveaux d'insuline, d'hormones sexuelles et de cytokines pro-inflammatoires ainsi qu'une amélioration de la fonction immunologique grâce à l'implication des lymphocytes NK et T.

Discussion: À la suite des résultats ressortis à partir de notre recension des écrits; il a été possible de ressortir de nombreux effets de l'activité physique chez les patients atteints du cancer que ce soit du point de vue du traitement ou de la thérapie.

Conclusion: Pour conclure, on remarque que l'activité physique n'est pas autant promue au sein du style de vie des cancéreux qu'elle ne le devrait (Stubblefield, 2017).

CONTRÔLE DE L'ÉQUILIBRE ET DE LA VITESSE DE MARCHE CHEZ LES PERSONNES ÂGÉES

¹T. Bergeron, ²D. Bouchard, ^{1,2} K. Cooling, ²M. Gallibois, ²E. Read, ²J. Hebert, ³P. Jarrett, ²M. Sénéchal, ²C. McGibbon, ¹G. Handrigan

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3 Horizon Health Network

Objectif : L'objectif de cette étude est de mesurer le contrôle de l'équilibre (CE) chez les personnes âgées habitant dans un foyer de soins, ainsi que la vitesse de marche (VM) et d'évaluer la relation entre ces deux indicateurs de capacité physique chez les personnes âgées, et aussi d'évaluer comment l'état cognitif et la force des membres inférieurs sont associés à ces mesures.

Méthode : Ces valeurs sont des mesures pré intervention dans un essai contrôlé randomisé multisite. Le CE a été mesuré pendant une période de 30 secondes en position debout (assisté) sur la Wii Balance Board™. La VM a été mesurée à l'aide d'un essai de marche chronométré (assisté) sur une distance de 10 m. La capacité cognitive a été mesurée au moyen du Mini-Mental State Examination (MMSE). La force d'extension des jambes a été mesurée au moyen d'un dynamomètre portatif.

Résultats : Au total, 29 hommes (valeurs sont $\bar{x} \pm SD$, 85±8.6 ans, 165.3±8.8 cm, 76.2±14.9 kg, 26.8±4.9 kg•m⁻²) et 68 femmes (86.7±7.5 ans, 153±10.8 cm, 61.8±14.15 kg, 25.6±7.7 kg•m⁻²) ont été évalués. La vitesse d'oscillation du contrôle de l'équilibre pour tous les participants était de 4.63±2.21 cm•s⁻¹ ($\bar{x} \pm SD$). La vitesse de marche calculée sur 10 mètres pour tous les participants était de 0.28±0.37 m•s⁻¹ ($\bar{x} \pm SD$). Il y avait une faible corrélation entre la VM sur 10 m et la vitesse d'oscillation du CE ($r = -0,11$, ±95%CI (-0.33, 0.11), $p > 0,05$). Il y avait une minime corrélation entre le MMSE et la vitesse d'oscillation du CE ($r = -0,09$, ±95%CI (-0.31, 0.13) $p > 0,05$), et MMSE et VM ($r = 0,03$, ±95%CI (-0.17, 0.24), $p > 0,05$). Il existait une corrélation modérée entre la force d'extension des jambes et la vitesse d'oscillation du CE ($r = -0,33$, ±95%CI (-0.54, -0.09), $p < 0,01$) et une faible relation entre la VM et la force des jambes ($r = 0,15$, ±95%CI (-0.08, 0.37), $p > 0,05$).

Conclusion : Les analyses préliminaires de corrélation indiquent une corrélation négative entre le CE et la VM, suggérant que ces tâches motrices reposent sur différentes capacités sensorielles et motrices. Nos données suggèrent qu'il existe une corrélation modérée entre la force d'extension des jambes et le contrôle de l'équilibre et non avec la vitesse de marche.

SYSTEMATIC REVIEW AND META-ANALYSIS OF RANDOMISED CONTROLLED TRIALS COMPARING FACE-TO-FACE VS REMOTE BEHAVIOUR CHANGE INTERVENTIONS FOR WEIGHT MANAGEMENT IN ADULTS CARRYING EXCESS WEIGHT

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Introduction: Weight management interventions can be successful in supporting clinically significant reductions in weight loss. Many face-to-face interventions are resource intensive, preventing widespread implementation. Remote delivery of intervention content is possible and potentially more cost-effective, but the effectiveness of weight management interventions delivered face-to-face compared to delivering the same intervention remotely are unknown.

Methods: The present study is a systematic review of randomised controlled trials (RCT) comparing the effectiveness of the same weight management intervention delivered face-to-face vs remotely. Electronic databases (MEDLINE, CINAHL, PsycINFO, Scopus, Embase) were searched for RCTs reporting weight outcomes of ≥ 3 months (12 weeks) and including adult participants (≥ 18 years) with overweight or obesity (BMI of $\geq 25\text{kg/m}^2$) or who had been overweight or obese prior to initial weight loss for interventions focused on weight loss maintenance. Weight change was examined using random effects meta-analyses at intervention cessation. The following sub-group analyses were conducted: intervention duration (3M, 6M, 12M, 18+M), remote delivery including human contact versus non human contact, and theory-based interventions versus non-theory-based interventions.

Results: Out of 7,910 hits, 22 RCTs met inclusion criteria. Face-to-Face interventions showed significantly greater weight changes at the end of the active intervention period -0.81kg (95% CI, -1.39 to -0.23kg). When grouped by intervention duration, no significant difference was found in weight change after 3 months, but at 6, 12, and 18+ months significant differences emerge that favoured face-to-face intervention delivery. Remotely delivered interventions were not significantly different to face-to-face delivered interventions when the intervention was based on theory or when remote delivery included no human contact elements. Subgroups of interventions not based on theory and including elements of human contact in remote delivery showed weight change in favour of the face-to-face delivered interventions.

Conclusion: Face to face delivered weight management interventions are overall more effective compared to remote delivery, although the difference is small. However, remote delivery was associated with similar effectiveness to face-to-face delivery in the short term, when remote delivery did not include human contact elements, and when the intervention was based on theory.

INVESTIGATING ACHILLES, FIBULARIS LONGUS AND TIBIALIS ANTERIOR TENDON VIBRATION DURING BALANCE CONTROL IN ADULTS WITH AND WITHOUT RECURRENT ANKLE SPRAIN

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Introduction: Ankle sprains are a common sports related trauma with many patients reporting residual symptoms post trauma, also known as chronic ankle instability (CAI). Achilles tendon (At) vibration has been studied extensively in terms of its postural effects and is a possible rehabilitation technique for CAI patients. The objective of this project is to explore the vibration of other lower leg tendons besides the At, and to compare it with fibularis longus (Fl) and tibialis anterior (Ta) tendon vibration on postural variables and lower leg electromyography with healthy adults and CAI adults.

Methodology: This project is a cross-sectional experimental design. Participants with CAI and without CAI were recruited for this project. Participants completed the foot and ankle ability measure (FAAM) and the ankle instability index (AII) questionnaires. Balance control (center of pressure variables) and muscular responses (EMG) were measured under different tendon vibrator placements (At, Fl, Ta) and in vision and non-vision conditions. Each trial was performed twice, which created 28 total trials. Each trial lasted 30 seconds and contained 10 seconds of vibration in the middle portion creating three phases per trial (NoVib, ViB, NoVib).

Results: Thirty participants, 15 with CAI (23.2±5.6 years, 1.77±0.1m, 73.6±10.5 kg) and 15 without CAI (20.3±1.6 years, 1.76±0.1m, 72.2±13.1 kg) were recruited to participate in this study. Questionnaires: There was a significant difference between the FAAM and CAIS scores for the injured group (values are $\bar{x} \pm SD$, 61.6±14.8%, and 78±10.7% respectively) when compared with the uninjured group (99.9±0.7%, and 100±0%).

Conclusion: A sufficient number of participants were recruited for this study, and the results of both the FAAM and CAIS questionnaires confirm that the participants reporting a history of ankle injuries are classified as individuals with CAI. Data analysis is ongoing and preliminary data for the balance control and EMG activity will be presented at the conference.

AN EXERCISE PROGRAM ADAPTED FOR CHRONIC DISEASES IN A RURAL COMMUNITY: THE EXECO PROGRAM

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Introduction: In rural communities, resources are often less accessible, even if the needs are as significant as those of the urban areas. To meet the needs of its citizens, Edmundston, a rural community in New Brunswick, created a community-based exercise program (EXECO) for people suffering from chronic diseases. The purpose of this program is to encourage physical activity among people with chronic diseases in the rural community.

Objectives: To evaluate the benefits of the EXECO program from a quantitative (functional capacities) and qualitative (subjective) point of view.

Hypothesis: We believe that the EXECO program is as beneficial at improving functional abilities as it is in terms of participant satisfaction.

Methods: EXECO is a 12-week program consisting of three 1-hour group exercise sessions per week led by health professionals. Group sessions consisted of cardiovascular, muscular and stretching exercises. Participants were taught to adapt the exercises according to their conditions. On a voluntary basis, 20 participants (W = 9, M = 11) suffering from various chronic diseases (chronic obstructive pulmonary, cardiovascular, high blood pressure, etc.) had their functional abilities assessed, using the Senior Fitness Tests, at the beginning (pre) and at the end (post) of the 12-week program. At the end of the program, they were also invited to participate in an individual interview to get some feedback on their perceived health, their physical activity level and their experience with the EXECO program.

Results: Our results show, among other things, an improvement of their balance on one leg (right = p : 0.004, left = p : 0.002) with eyes open, of their endurance of the lower limbs (30 sec sit to stand test) (p : 0.032) and of their cardiorespiratory endurance (2 min step test) (p < 0.001). Participants appreciated the coaching and sense of security that the EXECO program provided. They also mentioned the program gave them the confidence they needed to become proactive in order to regain control of their illness. They also perceived the changes, made possible by the EXECO program, in their daily lives. They said the program had a huge impact on their social life and mental health, and that it gave them courage to do other activities.

Conclusions: Rural communities, despite limited resources, can play an active role in the well-being of their members. The creation of the EXECO program is a good example where it is possible to see the improvement of the functional capacities as well as the satisfaction of the participants with initiatives of this kind.

THE ASSOCIATION BETWEEN FRAILTY STATUS AND SEDENTARY BEHAVIOUR FOR LONG-TERM CARE RESIDENTS

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Background: Older adults spend most of their time engaging in sedentary behaviour, particularly those living in long-term care (LTC) facilities. The impact of sedentary time on frailty is unknown. The objective of this study was to investigate the association between frailty status and sedentary behaviour amongst LTC residents.

Methods: This cross-sectional analysis included 38 long-term care residents. Frailty was measured using the Clinical Frailty Scale (1-9) while total sitting/laying time, number of transitions from sitting to standing, upright time, and stepping time was collected over seven consecutive days via ActivPAL accelerometers. Demographic information was collected from the resident's chart. Association between frailty status and sedentary behaviour was tested using linear regression models adjusting for potential confounders.

Results: Participants spent 21.9 ± 2.9 hours per day sitting/laying. The average frailty status was 5.5 ± 1.4 . Significant correlations were found between frailty status and upright time, sedentary time, and the number of transitions from sitting to standing. When adjusted for age, body mass index, and sex, through the linear regression model, significant results were still found with r^2 scores of 0.28, 0.32 and 0.14 for daily upright time, sedentary time and the number of transitions accordingly.

Conclusion: These findings suggest that sitting more is associated with a higher frailty status. Future trials to investigate methods to increase standing time amongst residents in LTC facilities should be encouraged.

Keywords: Frailty, Sedentary Behavior, Long-term Care

INACTIVE OLDER ADULTS EXERCISING AT HOME WITHOUT SPECIALIZED EQUIPMENT: AN EXPLORATORY CASE STUDY ON PROGRAM FEASIBILITY

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Purposes: Older adults experience physical activity barriers and enablers that either challenge or facilitate exercise. For example, less than 15% of older adults meet the Canadian Physical Activity Guidelines (CPAG) due to common barriers such as time, cost, and transportation (Belza et al., 2004; Leblanc et al., 2015). The guideline on exercise intensity recommends reaching a moderate physical activity level, aerobic intensity using non-specialized equipment (e.g., household materials) is unknown. Thus, this study aimed to understand the exercise intensity while using materials that could be assembled at home.

Methods: A qualitative design (interviews) was embedded into a quantitative intervention (exercise program) to highlight participant's experience. A mixed method approach quantified participants self-reported perceived barriers prior to exercise program; after 3 weeks, semi-structured interviews were used to explore barriers and enablers of the exercise program. A total of 10 inactive older adults received a three-week home-based exercise program. The exercise program consisted of Square-Stepping Exercise (SSE) for the aerobic portion and body weight exercise for resistance. Participants met the researchers before-and-after the final week to evaluate their aerobic intensity through monitoring heart rate in a 10-minute bout of SSE. As well, pre-and-post pedometers were used to measure steps to track a week of physical activity level.

Results: An exercise program designed with nonspecialized equipment in a home-setting influenced reaching CPAG aerobic intensity and increased total steps. From exploring participant experience, the most common barrier and enabler was time management (barrier) and convenience (enabler). Meanwhile, participants commonly self-reported pre-intervention lack of motivation as an important barrier to physical activity.

Conclusions: In conclusion, a home-based exercise program using nonspecialized equipment could help older adults reach CPAG aerobic intensity and could influence regular physical activity. After exploring participant enablers, convenience was identified as a facilitator to home-based exercise.

DOES DYNAMIC STRENGTH INDEX CORRELATE WITH FORCE VELOCITY PROFILE IN HIGH PERFORMANCE VARSITY ATHLETES

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Background: Over the years, strength training has been used considerably to enhance performance in athletic populations. In general, the load is set as a percentage of the maximum weight an individual can lift once with proper technique, and the load has been identified as a cornerstone to increase force and power. However, training using different loads and velocities have been shown to increase force and power production, suggesting that both load and velocity are critical for increasing the performance. Although many tests do exist to quantify force and velocity, force velocity profiling (FVP) has been used and reasonably accepted as an optimal way to identify deficit in these components. However, nobody has thoroughly looked at the potential association between dynamic strength index (DSI) and FVP.

Objective: The objective of this study will be to investigate the association between the DSI and the FVP methods in a healthy, varsity-level athletic population at the University of New Brunswick.

Methods: This study will recruit varsity level athletes (expected n=30). Participants will undergo a series of testing in the CSCA Sport Performance Centre, which will include: a force production test using an isometric mid-thigh pull (IMTP), as well as a countermovement vertical jump performed on a force platform. DSI will be computed from the two values obtained from these tests and will be expressed as a ratio of ballistic force to static force obtained from the vertical jump and the IMTP testing. Following a minimum 24-hour recovery interval; FVP will be performed for each participant. Statistical approaches including, but not limited to, interclass correlation coefficient (absolute agreement) will be used to investigate the association between both measures and determine whether they give similar results about the athlete.

Importance: These two measures have obvious differences; FVP being much less expensive, but more time consuming to use and incorporate into training compared to DSI. However, both provide strength & conditioning coaches with valuable data about their athletes' ability to produce force. The possibility of DSI and FVP having an association could improve future test selection and exercise prescription by providing strength & conditioning coaches with adequate tools to test their athletes, regardless of equipment inventory or budget.

VARIABILITY IN PHYSICAL FUNCTION IMPROVEMENTS FOR PATIENTS LIVING WITH BREAST CANCER DURING A 12-WEEK EXERCISE PROGRAM

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Introduction: Exercise is known to improve physical function for patients affected by breast cancer engaging in exercise during and/or after treatment. However, it is hypothesized that physical function improvement is highly variable depending on the timing of testing. It is thus possible that the improvement observed might not be true change.

Objective: Describe the variability in the weekly performance on common physical function tests in breast cancer patients engaged in a 12-week exercise program.

Methods: A total of 27 patients who received a diagnosis of breast cancer were recruited in an exercise program with two sessions a week for 12 weeks in a community-based fitness facility. Baseline characteristics such as physical activity level (pedometer), and age were recorded. The 6-minute walk test, the one-leg stance test and the chair stance test were administered weekly.

Results: The average age of participants was 54 ± 12.2 averaging 109.3 ± 97.7 minutes of exercise at moderate or vigorous intensity at baseline. At pre-post measurement, a significant improvement of 66.3 meters ± 134.6 was observed in the 6-minute walk test ($p=0.040$). The number of chair stands in 30 seconds also improved significantly pre-post 4 ± 3.3 ($p=0.000$).

Conclusion: The daily variability of exercise improvement surpasses or do not surpass the average pre-post change in common physical function tests when patients are being treated with breast cancer. It is important to take into consideration the variability of the tests before concluding a significant improvement in physical function while doing exercise during or after breast cancer treatment.

CHANGES IN RESTING METABOLIC RATE, METABOLIC FLEXIBILITY, AND GLUCOSE TOLERANCE FOLLOWING SPRINT INTERVAL TRAINING IN ADULTS LIVING WITH OBESITY

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Background: Obesity is associated with a higher resting metabolic rate (RMR), an impaired metabolic flexibility and a lower glucose tolerance. In healthy individuals, exercise has been shown to enhance performance and overall health through an improvement in these variables. However, limited research has investigated the relationship between sprint interval training (SIT) and change in RMR, metabolic flexibility, and glucose tolerance in individuals living with obesity.

Purpose: The primary objective of this study was to compare changes in RMR, metabolic flexibility, and glucose tolerance in individuals living with obesity compared to individuals without obesity following a 4-week SIT intervention.

Methods: Adults living with obesity (BMI ≥ 30 kg/m²; n=9) or without obesity (BMI $\geq 18.5 \leq 24.9$ kg/m²; n=13) who are physically inactive were recruited. Participants took part in a 4-week SIT intervention performed three times per week. The SIT intervention consisted of a 30-sec Wingate with a load of 7.5% of the participant's body weight and was separated by four minutes of active recovery at 59 watts. Outcome measures were changes in RMR and metabolic flexibility (measured with indirect calorimetry), and glucose tolerance measured with an oral glucose tolerance test.

Results: A significant change in RER was observed in the normal weight group (0.78 ± 0.04 vs. 0.82 ± 0.04 ; $p=0.017$), while no significant difference was observed in individuals living with obesity following 4-week SIT ($p>0.05$). Changes in RER were significantly different between the two groups (normal weight: 0.035 ± 0.046 vs. obese: -0.006 ± 0.037 ; $p=0.049$). No significant differences were observed following the 4-week SIT intervention for RMR and glucose tolerance ($p>0.05$).

Conclusion: Individuals living with obesity may respond differently to SIT regarding changes in metabolic flexibility compared to individuals without obesity; however, similar changes were observed in glucose tolerance and RMR. More research is needed on SIT and improvements in metabolic health outcomes in individuals living with obesity to further understand the relationship between them.

THE ABILITY OF EXERCISE TO MEANINGFULLY IMPROVE GLUCOSE TOLERANCE IN PEOPLE LIVING WITH PREDIABETES: A META-ANALYSIS

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Background: Approximately 25 – 50% of individuals living with prediabetes will develop Type 2 diabetes within five years of their diagnosis. Although exercise training has been well established as a method to improve glycemic control, the degree to which this translates into meaningful improvements in glucose tolerance – particularly in individuals living with prediabetes – is unclear. Therefore, the purpose of this meta-analysis was to examine the ability of exercise training to meaningfully improve glucose tolerance in individuals living with prediabetes. It was hypothesized that the majority of exercise interventions designed for individuals with prediabetes would not improve glucose tolerance beyond the smallest worthwhile difference.

Methods: Searches were performed in MEDLINE, The Cumulative Index to Nursing and Allied Health Literature, SPORTDiscus, and the Cochrane Library. Included studies measured glucose tolerance using the 2-hour, 75-gram oral glucose tolerance test at baseline and follow-up; implemented an exercise intervention lasting at least 12-weeks; and included adults living with prediabetes. Studies were excluded if participants currently had, or previously reported having, gestational or Type 2 diabetes, or if any form of dietary intervention was included in each of the outlined intervention arms. Weighted mean effect summaries were determined using random-effects models. Magnitude-based inference estimated the likelihood that observed changes in glucose tolerance surpassed the smallest worthwhile difference. Meta-regression analyses were performed to determine the predictors of change in glucose tolerance in individuals with prediabetes.

Results: Nine articles were included in the meta-analysis, producing 12 independent exercise interventions. On average, exercise training led to a 5.9% (95% confidence interval [CI]: 3.7 – 8.0%) improvement in glucose tolerance. Seven (58%) exercise interventions were deemed likely to produce a change in glucose tolerance that would benefit patients, whereas five (42%) had trivial or unclear findings. Combined aerobic and resistance exercise training was associated with a 4.77% (95% CI: 1.73 – 7.80%) additional improvement in glucose tolerance compared to an aerobic only prescription. Meeting the aerobic component of physical activity guidelines was associated with a 4.14% (95% CI: 0.93 – 7.35%) improvement in glucose tolerance compared to those prescriptions that did not.

Conclusion: While exercise intervention led to statistically significant improvements in glucose tolerance, the benefit for individuals living with prediabetes remains unclear, as nearly half of the implemented trials were unable to improve glucose tolerance beyond the smallest worthwhile difference. Further research is needed to delineate optimal prescription parameters for generating meaningful benefits in glucose tolerance.

CAN A RESISTANCE TRAINING REACH THE OPTIMAL INTENSITY WITHOUT SPECIALIZED EQUIPMENT FOR MEN LIVING WITH OBESITY? PILLAR SOCIAL, CULTURAL, ENVIRONMENTAL AND POPULATION HEALTH

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Background & Objective; Even if the benefits of exercise are well known, long-term adherence is poor. Previous studies have shown that a circuit training using resistance exercises done in a fitness facility was enjoyed by men living with obesity and could be considered aerobic exercises at moderate intensity (average above 40% of heart rate reserve). This program could potentially lead to long-term adherence. However, it is unknown if a similar program can be completed in a home setting without specialized equipment. The main objective of this study was to test whether a circuit resistance training using only body weight as resistance can reach aerobic moderate intensity without specialized equipment.

Methods; Ten men having a BMI over 30 kg/m² were recruited. Participants met the research assistant twice. During the first visit, they completed exercises without equipment (lunges, push-ups, squats, dips) for one-minute each, followed by one-minute of rest. The circuit will repeat until 50 minutes are completed. During the second visit, the same exercise circuit will be performed, but the order was altered (squats, push-ups, lunges, dips). Heart rate was measured via a heart rate monitor every 15 seconds.

Results; The participant's average heart rate during exercise at first visit and second visit was 59.4% and 51.5% of heart rate reserve respectively with no significant difference between two visits (P=0.22). Participants could reach at least moderate intensity for 89% of total time during the first visit and 82% of total time during the second visit with no significant difference between the two visits (P=0.61)

Conclusion; Regardless of the exercise order, a resistance training program completed in a circuit manner reaches moderate intensity with no specialized equipment. The next step is to test the long-term adherence to such program compared with a traditional exercise program.

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