P117-f
Obésité viscérale chez les patients douloureux chroniques : profil des adipokines et capacité aérobie
F. Doury-Panchout *, B. Fouquet **, J.-C. Métivier *, C. Court *
* Service de médecine physique et de réadaptation, CHU de Tours, Tours cedex 1, France
** Service de médecine physique et de réadaptation, hôpital Trouseau, CHU de Tours, route de Loches, 37044 Tours cedex 1, France

Mots clés : Douloureux chroniques ; Obésité viscérale ; Syndrome d’inactivité
Objectif. – Les adipokines sont sécrétés par le tissu adipeux et interagissent avec des fonctions métaboliques, endocriniennes et immunes. De plus, des adipokines peuvent induire un état d’insulinorésistance musculaire. L’objectif principal de cette étude a été d’évaluer les taux de différentes adipokines chez des patients douloureux chroniques présentant une obésité viscérale et les corrélations avec la capacité aérobie.

Méthodes. – Cent et un patients ayant une douleur chronique d’origine musculosquelettique avec une obésité viscérale (périmètre abdominal > 88 cm chez les femmes et > 103 cm chez les hommes) ont été comparés à 30 patients n’ayant pas d’obésité viscérale (patients contrôles). Tous ont eu la même évaluation avant un programme de réadaptation. L’index de masse corporelle (IMC) a été mesuré. Des prélèvements de sérum ont été prélevés à l’entrée après un jeûne de 12 heures. Les taux de leptine, d’adiponectine, d’insuline ont été mesurés. Une épreuve d’effort sur cycloergomètre (EEF) a été pratiquée permettant la mesure de la VO2 max aux seuils aérobie et anaérobie.

Résultats. – Les patients ayant une obésité viscérale avaient des taux significativement plus élevés de leptine et d’insuline que les contrôles. Les valeurs moyennes de leptine et d’adiponectine étaient significativement plus basses chez les hommes que chez les femmes. Les taux de leptine étaient significativement mieux corrélés avec tous les paramètres de l’obésité que ceux d’adiponectine. Nous avons trouvé des corrélations significatives négatives entre tous les paramètres de l’EEF, particulièrement avec les seuils aérobie et anaérobie. De telles corrélations n’ont pas été trouvées avec les taux d’adiponectine et l’IMC, ce dernier étant seulement corrélé négativement avec les seuils aérobie et anaérobie.

Conclusions. – Comme dans cette étude, des études ont montré chez des athlètes une corrélation négative entre les taux de leptine et la capacité aérobie, faisant penser qu’il existait un lien avec la masse graisseuse. Nous avons trouvé clairement que les taux d’adiponectine et de leptine n’avaient pas les mêmes corrélations avec la VO2 max, indépendamment du sexe et de l’âge. Ceci évoque un mécanisme biologique à l’origine d’une capacité aérobie plus faible chez les patients ayant des taux élevés de leptine.

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Keywords: Low back pain; PILE; Cardiac cost; Deconditioning; Functional restoration
Objective. – The lifting ability is associated with a cardiac strain. No previous study has evaluated the cardiac cost of the Progressive Isoinertial Lifting Evaluation (PILE) that is a reproductive test used in chronic low back pain patients. The aim of this study was to evaluate the evolution of its cardiac cost before and after a rehabilitation program.

Methods. – Three hundred and four back pain patients (134 men and 170 women; mean age 42.1 + 8.8 years) were included in this cohort study. All were evaluated before and after a 4-week functional restoration program (FRP) with a PILE. Were measured before, at the end and 5 minutes after the test: the heart rate, the blood systolic and diastolic pressure, the oxygen saturation (SaO2). The cardiac strain was evaluated by the calculated relative cardiac cost (RCC) which allowed the classification of the cardiac strain in 4 categories: “weak”, “middle”, “high” and “very high”.

Results. – Before and after the FRP, the RCC was significantly correlated with the total mass mobilized during all the PILE, the percentage of the maximal load/body weight and the maximal load that reached the patient at the end of the test (P < 0.0001). The RCC was significantly correlated with the variation in the systolic blood pressure (P < 0.004). Although, we have observed that the parameters of the load have doubled with the FRP, the mean values of the RCC were not significantly different before and after the FRP (respectively 33.6 ± 33.6 and 38.3 ± 23.6%). At the entry, 16/304 patients were in the “very high” group and 19/304 after the FRP. In type II and III obese patients, the mean values of the SaO2 were significantly lower than in others patients before and after the FRP (P < 0.01).

Conclusions. – If the lifting ability is increased by a FRP, the fitness part of the program allows a stable cardiac strain associated to this increase. These results are very important in a population of physical heavy workers. The FRP diminishes the cardiovascular risks associated with heavy physical work.

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English version

P112-e
Relative cardiac cost and PILE: Effects of a restoration program
B. Fouquet *, F. Doury-Panchout **, J.-C. Métivier *, M.-J. Borie-Malavieille *, C. Bourlier *
* Service de médecine physique et de réadaptation, CHU de Tours, route de Loches, 37044 Tours cedex 1, France
** Service de médecine physique et de réadaptation, CHIC Château Renault, France

*Corresponding author.
E-mail address: fouquet@med.univ-tours.fr

Keywords: Multiple sclerosis; Fatigue; Exercise training
Background. – Overall, there is fairly strong and consistent evidence that individuals with multiple sclerosis (MS) are largely inactive compared with non-diseased populations. Current studies demonstrate that physical activity in patients with MS can counteract fatigue. No study explores physical activity in severely disabled MS patients. This study proposes to assess a supervised aerobic training program in a population of non-ambulatory MS patients (EDSS 6.5 to 7.5).

Methods. – This is a prospective pilot open cohort study. Aerobic exercise program using a therapeutic exerciser (Motomed®): 10 weeks, 3 times per week. The protocol begins with 15 minutes upper limbs active work, followed by 20 minutes of lower limbs passive work. Fatigue score (Fatigue Severity Scale) was assessed at baseline, 10 weeks, 3 and 6 months.

Results. – Forty (mean age 50.4 ± 8.5 years, median EDSS: 6.71) completed the study. Compared with baseline, patients demonstrated significant decrease (P < 0.05) of fatigue (FSS) at 10 weeks. Subgroups’ analysis: fatigue group (n = 28): FSS ≥ 36 and [no fatigue group (n = 12) FSS < 36] showed fatigue improvement in fatigue group (P = 0.0036). No adverse events were observed.

Discussion/Conclusion. – Exercise training reduces fatigue as demonstrated by several studies [1]. Nevertheless, fatigue reduction obtained with exercise training remains a debated issue, particularly for studies using FSS [2]. In our study, this measurement tool disclosed a significant difference which might be explained, in part, by deconditioning find in our patients, their high EDSS and fatigue high score. Supervised training programs remain effective for patients with a severe disability.
References
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P114-e
Acti-met: A new tool to estimate physical activity by measuring caloric expenditure
J. Satge *, M. Labrune
SSR cardiovascule, fédération des services de cardiologie, CHU de Toulouse, 1, avenue Jean-Poulhès, 31059 Toulouse, France
*Corresponding author.
E-mail address: julia.satge@gmail.com.

Keywords: Physical activity; Caloric expenditure; Therapeutic education

Introduction.– Currently, measurement of physical activity in clinical practice can be done in various ways, including questionnaires, pedometers or accelerometers. However, these tools are underused and physical inactivity is a cardiovascular risk factor rarely evaluated. Furthermore, patients’ understanding of the goals of physical activity could be improved by estimating energy expenditure that must be greater than 1000 kcal/week. The objective was to build a new tool to assess physical activity.

Method.– From a compendium of physical activity [1], we divided physical activity into three major categories of intensity (3–4 MET mild, MET 5–7 moderate and intense > 8 MET) each segmented into four types of activity (locomotion, cycling, swimming and others). In order to calculate energy expenditure in kcal, the formula A × B × C was used (A = type and intensity of physical activity, B = time in hours, C = weight of the subject).

Results.– This tool corresponds to a slide rule for mapping intensity of activity, duration and weight. Moving the cursor gives the energy expenditure. Recommendations for weekly energy expenditure are recalled on back of the measurement tool.

Discussion.– This new instrument has been found to be convenient to use. It is the result of scientific work in the field of measuring energy expenditure. Prospects include validation in comparison with other means of evaluation of physical activity (survey, accelerometer) and secondly to test its effectiveness in compliance with regular physical activity via an improved educational message.

Reference
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P115-e
Validity of a questionnaire to assess the physical activity level in coronary artery disease patients
T. Guiraud a,*, R. Granger a, M. Bousquet a, V. Gremaux b
a Clinique de Saint-Orens, centre de rééducation cardiovasculaire et pulmonaire, 12, avenue de Revel, 31650 Saint-Orens-de-Gameville, France
b Pôle rééducation-rehabilitation, CHU de Dijon, Dijon, France
*Corresponding author.
E-mail address: t.guiraud@clinique-saint-orens.fr.

Keywords: Questionnaire; Assessment; Coronary; Validity; Exercise

Purpose.– To compare, in coronary artery disease patients, a subjective measurement of the physical activity (PA) level using the Dijon PA questionnaire (DPAQ), and their true PA using an accelerometer.

Material/Patients and methods.– Seventy patients wore an accelerometer throughout one week after a cardiac-rehabilitation program that included therapeutic education about regular PA. Energy expenditure (EE) was measured during the one-week period with the MyWellness Key actimeter (MWK). PA was classified as “light” (1.8–2.9 METs), “moderate” (3–5.9 METs), or “intense” (> 6 METs). Patients completed the DPAQ at the end of the week. Associations between objectively measured PA and DPAQ total score and sub-scores were studied using Spearman correlation coefficient.

Results.– The mean weekly total active EE was 619.9 ± 374.6 Kcal, and the mean DPAQ score was 21.3 ± 3.1/30 points. There were low but significant correlation between total active EE and the DPAQ score (Rho = 0.4; P = 0.009). There were no correlations between the EE resulting from light-intensity PA and the “daily activity” sub-score, neither between peak power output and total DPAQ score.

Discussion.– The DPAQ significantly correlates with objective measures given by the MWK. The choice between these tools relies on the clinician’s appreciation, taking in account patients’ characteristics and goals as well as the cost and availability of the method.

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P116-e
Effects of TENS on walking distance in a patient with peripheral artery disease
A. Boned *, R. Granger a, M. Bousquet a, L. Richard c, V. Gremaux b, M. Labrune e, T. Guiraud a
* Clinique de Saint-Orens, centre de rééducation cardiovasculaire et pulmonaire, 12, avenue de Revel, 31650 Saint-Orens-de-Gameville, France
b Pôle rééducation-rehabilitation, CHU de Dijon, Dijon, France
c Département de réadaptation, CHU de Toulouse, Toulouse, France
*Corresponding author.
E-mail address: t.guiraud@clinique-saint-orens.fr.

Keywords: Exercise training; TENS; Vascular rehabilitation; PAD

Introduction.– Exercise training (including aerobic treadmill training and strength exercises below and above the level of injury) is a core component of rehabilitation in peripheral artery disease (PAD) patients. Interval training seems to be more effective to increase exercise tolerance, for the management of cardiovascular risk factors and to improve endothelial function. It is now being recommended for cardiac rehabilitation even in patients with very impaired functional abilities. To date, there is no consensus about the optimal method for training in PAD. Guidelines recommend either training at constant intensity and moderate speed during a set time period, or to repeat bouts of walking exercises until the beginning of pain (interspersed with 10 minutes of passive recovery) in order to increase the walking distance. However, this latter modality can be difficult to implement when pain is hard to bear. Thus, finding techniques to help postpone the pain would be interesting in order to improve training efficiency and patient comfort.

Objective.– To assess potential interest of transcutaneous electrical neurostimulation (TENS) during exercise training program in PAD patients.

Methods.– We studied the evolution of walking distance in a 61-year-old man with PAD who performed 18 sessions of supervised exercise training. In half of sessions, transcutaneous electrical neurostimulation (TENS) set at 80 Hz was used during 45 minutes before exercise session.

Results.– We observed that pain symptoms came later after TENS that increased notably the walking distance.

Discussion.– Two phenomena could explain why the patient browsed a longer walking distance: – an improvement in oxygen supply by collateral recruitment and vasodilatation; – a reduction of pain, which would appear to involve different pathways.
We conclude that TENS should be further investigated in patients with PAD.

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