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BOOK OF ABSTRACTS

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This document aims to summarize and analyze systematically the current body of evidence about the effects of specific exercise protocols on physical function, balance control and quality of life in patients with peripheral neuropathy (PNP) induced by chemotherapy.
Methods
Systematic Review
Literature survey
Specific terms were identified for the literature research in MEDLINE, Scopus, Bandolier, PEDro, and Web of Science. Only studies published in peer-reviewed journals written in English language were considered. Four manuscripts were classified as eligible with 88 total participants, with an average of 57.1 years old. Quality appraisal classified two studies as high quality investigations while two with low quality. Results were summarized in the following domains: "CIPN symptoms", "Static balance control", "Dynamic balance control", "Quality of life and Physical function".
Results
Specific exercise protocols were able to counteract common symptoms of chemotherapy-induced peripheral neuropathy (CIPN) during chemotherapy treatments. Significant improvements were detected on postural control. Additionally, patients' quality of life and independence were found ameliorated after exercise sessions, together with reductions on altered sensations and in other peripheral neuropathy symptoms. Combined exercise protocols including endurance, strength and sensorimotor training showed larger improvements.
Conclusions
Exercise prescriptions for cancer patients undergoing chemotherapy with CIPN symptoms should be recommended since these exercise interventions appeared as feasible and have been demonstrated as useful tools to counteract some common side effects of chemotherapeutic agents.

REGULAR PHYSICAL ACTIVITY IN CHRONIC HEMODIALYSIS PATIENTS: EFFECTS ON DIURNAL PATTERN OF STEROID HORMONES.

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Introduction
Chronic renal diseases need dialysis treatment which has many side effects on patients. We notice a decrease in quality of life (Finkelstein et al., 2009), hormone release disorders (Raff et al., 2012), appetite and sleep disturbances (Mitch, 2002; Murtagh et al., 2007), and an inflammation marker increase (CRP: C-reactive protein) (Barany et al., 2012).
Health benefits of physical activity in hemodialysis patients are well-documented (Labadens et al., 2014). But, to our knowledge, little data are available on the effect of physical activity on hormonal circadian rhythm.
Methods
Fifteen hemodialysis patients were distributed into two groups: TP group that engaged in an intradialytic resistance band exercise training program (Bullani et al., 2011) three times a week during 3 months (N: 8, age: 56.5 ± 17.24 years, weight: 89.26 ± 11.10 kg) and NTP group that not engaged in training program (N: 6, age: 57 ± 12.88 years, weight: 69.17 ± 9.35 years). Blood and salivary samples were collected at the beginning and at the end of the study. Three-day food diaries, appetite and sleep disturbances questionnaires are also used. Salivary samples were collected six times a day to observe cortisol and DHEA (dehydroepi-androsterone) circadian variations.
Results
The main expected result is an improve circadian rhythm of hormonal release. The unusually high level of cortisol during the night (Raff et al. 2012) may decrease. The regular physical activity could also contribute to the maintenance of the DHEA level, which decreases faster in hemodialysis patients than in healthy people (Kakiyo et al., 2012). Moreover, we expected a decrease in inflammation marker and in sleep disorders in TP group patients.
Discussion
The improvement of cortisol and DHEA diurnal pattern, in response to physical activity, will preserve patient autonomy and enhance quality of life by reducing sedentary lifestyle.
References
Barany P, Divino Filho J, Bergstrom J. (1997). American journal of kidney disease, 4(29), 565-568.
Bullani R, El-Housseini Y, Giordano F, Larcinese A, Ciutto L, Bertrand P, Wuerzner G, Burnier M, Teta D. (2011). Journal of renal nutrition, 1(21), 61-65.
Finkelstein FO, Wuerth D, Finkelstein SH. (2009). Kidney international, 9(76), 946-952.
Kakiyo R, Shoji T, Hayashi T, Tatsumi-Shimomura N, Tsujimoto Y, Tabata T, Shima H, Mori K, Fukumoto S, Tohara H, Koyama H, Emoto M, Ishimira E, Nishizawa Y, Imaka M. (2012). Nephrology dialysis transplantation, 10(27), 3915-3922.
Labadens A, Lasseur C, Labat T, Trolonge S, Chauveau P. (2014). Néphrologie et Thérapeutique, 3(10), 151-158.
Mitch WE. (2002). Journal of clinical investigations, 4(110), 437-439.
Murtagh F, Addingtion-Hall J, Higginson IJ. (2007). Advances in chronic kidney disease, 1(14), 82-99.
Raff H, Trivedi H. (2012). Endocrine connections, 2, 23-31.
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BALANCE IMPAIRMENT IN KIDNEY TRANSPLANT RECIPIENTS WITHOUT CONCURRENT PERIPHERAL NEUROPATHY.

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Introduction
Kidney transplant recipients (KTRs) present with an overall compromised functional capacity, low levels of physical activity, muscle atrophy, and peripheral nerve dysfunction that may result in high postural instability (McAdams-DeMarco et al., 2015). Therefore, this study aimed to compare the static balance control of KTRs with healthy adults (HA).
Methods

19 KTRs and 19 HA underwent the Romberg test on a stabilometric platform with eyes open (EO), eyes closed (EC) and during a dual task (DT) condition. Velocity-based centre of pressure (COP) measures, COP velocity (COPv) and sway area (SA), as well as position-based outcomes such as anterior-posterior (AP) and medio-lateral (ML) ranges of COP displacements were taken for the account.
Results
Independent comparisons, by means of ANCOVA, showed an overall lower performance of KTRs compared to HA ($p < .05$). The EC condition determined the worse performance for KTRs, suggesting a poorer capacity of relying on proprioceptive information when maintaining the upright posture. The addition of a cognitive task did not result in a worse balance performance in KTRs.
Discussion
An impaired postural control is one of the main predictors of falls in elderly subjects, and might also represent a risk factor for falling in middle-aged KTRs.
References
McAdams-DeMarco MA, Law A, King E, Orandi B, Salter M, Gupta N et al. Am J Transplant 2015;15(1):149-154.

A TAILORED PHYSICAL ACTIVITY INTERVENTION AND EXERCISE PRESCRIPTION TO IMPROVE CLINICAL PRACTICE FOR ONCO-HEMATOLOGY INPATIENTS

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Introduction
Therapy of hematological malignancies persists for a long time and involves in various complications. The main consequences of chemotherapy are fatigue and forced bed rest, due to immunodeficiency secondary to the treatment that, in turn, also contributes to in impairment of physical efficiency. Physical activity and structure exercise programs can prevent this weakening through the improvement of aerobic capacity and muscle strength, thus this investigation aimed to determine the beneficial role of exercise in the maintenance of the physical function in onco-hematology inpatients.
Methods
The study included onco-hematology patients, who were administered a tailored exercise protocol during their hospitalization. Intervention was mainly focused for the development of strength and flexibility; exercise sessions were directly performed in the patients' own hospital room. Exercise program was supervised by an Exercise Specialist and driven by audio-video support. Intervention group was compared with control group, which remained physically inactive for all period of hospitalization.
Results
The intervention group did not show significant decreases during hospitalization period. Significant changes were found in flexibility performance and in balance control ($p <0.05$). On the contrary, strength had a significant decrease in the control group.
Discussion
Results from this investigation showed that a tailored exercise protocol administered to hospitalized onco-hematology patients is feasible and efficient to promote the maintenance of their physical function. Moreover, results indicated a beneficial effect of the exercise counteracting side effects of chemotherapy treatments with a concurrent reduction in bed rest syndrome.

Mini-Orals

MO-PM07 Performance Testing

TEST-RETEST VARIATION AND ENERGY CONTRIBUTION DURING ANAEROBIC CAPACITY TESTING

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Introduction
Anaerobic capacity tests determine non-aerobic pathway contributions during a single bout of supramaximal exercise (>VO2max) performed to volitional fatigue. Understanding the variability in estimates of energy contributions from anaerobic capacity tests is needed to better understand anaerobic performance and the effectiveness of training strategies in enhancing anaerobic capacity. This study determined test variability and anaerobic energy contribution of the maximal accumulated oxygen deficit (MAOD) test.
Methods
Nineteen men (mean ±SD: 28 ±6 y, VO2peak 50 ±7 ml·kg-1·min-1) undertook four experimental trials of cycling to fatigue (Excalibur Sport, Lode) at a power output equivalent to 120% VO2peak, after an overnight fast and separated by a minimum 48 h recovery. Anaerobic energy contribution was calculated as the difference between O2 demand and uptake (1) from respiratory data averaged every 15 s (Quark, Cosmed). Test-retest reliability was determined using coefficient of variation (CV) with 95% confidence intervals (CI), change in mean with 95% limits of agreement (LOA), and intraclass correlation coefficient (ICC).
Results
The mean anaerobic capacity during each trial was 61.1, 60.5, 62.2 and 61.6 ml·kg-1. Change in the mean ±LOA between each sequential pair of trials was -0.9 ±20, 2.7 ±14 and -0.8 ±15%, respectively. The CV values were 5.7 (CI: 3.5 – 7.8), 4.4 (2.9 – 6.0) and 4.4% (3.1 – 5.8) and ICC values were 0.64, 0.81 and 0.84. Mean time to fatigue (TTF) for each trial was 185, 185, 196 and 193 s, with CV values of 8.5 (5.8 – 11.3), 7.5 (4.1 – 10.8) and 6.3% (4.4 – 8.3). The mean anaerobic energy contribution during each trial was 35, 34, 33 and 33%, respectively. The change in mean anaerobic contribution ±LOA was -2.3 ±17, 3.2 ±23 and 0.6 ±21%, with CV of 5.1 (3.4 – 6.9), 6.5 (3.8 – 9.2) and 5.9% (3.8 – 7.9) and ICC of 0.65, 0.48 and 0.66.
Discussion
Variability in measures of anaerobic capacity, assessed via CV and LOA, decreased between experimental trials 1 and 2 but not subsequent trials. However, the increase in mean anaerobic capacity and TTF between trials 2 and 3 indicate positive systematic bias due to a learning/training effect. This finding would suggest that to decrease test variability in determining anaerobic capacity of recreationally trained men, two familiarisation trials are recommended. A change in anaerobic capacity >4.4% is also required to exceed the CV of the MAOD test. The effect of multiple trials in determining variation of anaerobic energy contribution was unclear. In conclusion, two familiarisation trials for MAOD derived anaerobic capacity should permit reliability to exceed the criteria of CV <5% and ICC >0.80 (2).