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PREFACE

This abstract book includes all the abstracts of the papers presented at the ***6th Annual International Conference on Kinesiology & Exercise Sciences, 28-30 June 2010 & 1 July 2010,*** organized by the Panhellenic Association of Sports Economists & Managers (PASEM) & the Sports Research Unit of the Athens Institute for Education and Research. In total there were 27 papers and 38 presenters, coming from 12 different countries (Brazil, Canada, Czech Republic, Estonia, France, Iran, Malaysia, South Korea, Saudi Arabia, Slovakia, UK and USA). The conference was organized into 8 panels that included areas such as Physical Activity in Youth - Attitudes and Motivation, Physical Activity through the Lifespan, Effects of Exercise and Training, Body Composition, Physical Activity and Fitness in Youth, Human Performance and Methodological Considerations in Kinesiology. As it is the publication policy of the Institute, the papers presented in this conference will be considered for publication in one of the books of ATINER.

The Institute was established in 1995 as an independent academic organization with the mission to become a forum where academics and researchers from all over the world could meet in Athens and exchange ideas on their research and consider the future developments of their fields of study. Our mission is to make ATHENS a place where academics and researchers from all over the world meet to discuss the developments of their discipline and present their work. To serve this purpose, conferences are organized along the lines of well established and well defined scientific disciplines. In addition, interdisciplinary conferences are also organized because they serve the mission statement of the Institute. Since 1995, ATINER has organized more than 100 international conferences and has published over 80 books.

Academically, the Institute is organized into four research divisions and nineteen research units. Each research unit organizes at least one annual conference and undertakes various small and large research projects.

I would like to thank all the participants, the members of the organizing and academic committee and most importantly the administration staff of ATINER for putting this conference together.

Gregory T. Papanikos
Director

The Effects of Aerobic Training Program and Diet on Blood Pressure and Renin-Aldestron Level of Obese Women with Hypertension

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Introduction: The relevance of both hypertension and obesity is an important public health challenges worldwide (4). The precise mechanisms linking obesity to hypertension are not fully understood. Obesity-related hypertension is commonly associated with some metabolic syndromes, such as insulin resistance and glucose intolerance (2). Fagard (2006) with meta-analysis on endurance training on 105 subjects showed reduction in resting blood pressure, plasma noradrenalin (29%) and plasma renin activity (20%).

Objectives: The purpose of this study was to compare the effect of aerobic training and diet on lowering blood pressure (stage 1 hypertension) of overweight/obese women.

Methods: Twenty one volunteers with stage 1 hypertension (mean BP: 141.9 mm.Hg systolic and 87.75 mm.Hg diastolic; age range: 30-49 years and BMI: 34.26 kg/m^2) were selected. They were randomly divided into two groups; A) aerobic training with diet (n=11) ; B) only diet (n=10). Group A received low calorie diet (1000-1500 Kcal) with exercise (16 sessions aerobic training program with 40-60 percent of vo^2max; 3 times/week for 45-50 minutes). Group B received similar diet without exercise. Blood pressure, anthropometric parameters, metabolic, hormonal parameters and VO^2max were measured in the first, eight and sixteenth sessions.

Results: Both groups showed a significant reduction in weight, BMI, body Fat percent, mean arterial and systolic blood pressure and an increase in VO^2max. Only the first group showed a significant decrease in waist circumference, diastolic blood pressure and an increase in cholesterol and renin levels.

Conclusions: The combined aerobic training for sixteen sessions with low calorie diet is more effective in lowering blood pressure and cardiovascular risks on overweight/obese women with 1 stage hypertension.

Slower Recovery as a Contributor to the Decline in Endurance Performance with Aging

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Some of the decline in physical performance with aging is attributable to physiological factors, (e.g. reduced maximal heart rate); however, slower recovery may also contribute to this performance decline. A slower recovery would mean that total effective training would be consequently reduced.

Objective: The objective of this study was to evaluate the role of aging in speed of recovery between training bouts.

Methods: Ten middle-aged (>50) and 10 younger (<30) resistance-trained volunteers performed 3 sets of 8 resistance exercises to failure at ~10 RM, and then attempted to replicate this performance after 24, 48, 72, and 96 hours (counterbalanced order). The first set was used for analyses.

Results: Mean and individual scores for the older athletes were lower at 48 than for the younger group ($p<.05$). On average, the young group recovered to above baseline at 72 hours, but the middle aged group recovered only to baseline. Individual data suggested high variability among all participants and that several of the older participants evidenced a very slow recovery relative to younger athletes. In the younger and older participants, there was tendency toward slower recovery for upper- compared to lower- body exercises.

Conclusions: These findings suggest that older weight trainers tended to recover more slowly than younger resistance-trained individuals, but both groups evidence large variability. A slowed recovery represents a viable contributor to a decline in physical performance across aging.

Effects of Eurycoma Longifolia Jack Supplementation on Endurance Running Performance and Selected Psysiological Parameters in the Heat

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Objectives: To investigate the effects of *Eurycoma longifolia Jack* supplementation on endurance running performance and selected physiological parameters in the heat in recreational athletes.

Methods: Twelve Malaysian healthy male recreational athletes (Age: 23.3 ± 3.7 years old; VO_{2max}: 45.1 ± 8.1 $ml.kg^{-1}.min^{-1}$) were recruited in this double blind, placebo-controlled, cross-over study. Subjects completed two endurance running trials in the heat (31°C, 70% relative humidity), performed on separate days, after consuming either 2 capsules of *Eurycoma longifolia* Jack (75 mg per capsule) or placebo per day for 7 days before and one hour prior to the experimental trial. On trial day, after 5 minutes of warm-up at 50 % VO_{2max}, the subjects were requested to run on the treadmill at 60 % VO_{2max} for 60 minutes. This was immediately followed by a 20-minute time trial for determining endurance running performance. Blood samples were taken before warm-up, after warm-up, and every 20 minutes during the trial. Statistical analysis was performed using one-way ANOVA with repeated measures.

Results: Endurance running performance was not significantly different between *Eurycoma longifolia Jack* and the placebo trials. Similarly, oxygen uptake, heart rate, skin temperature, tympanic temperature, ratings of perceived exertion, haemoglobin concentration, haematocrit level, plasma glucose concentration, and plasma free fatty acid concentration were not significantly different between the trials.

Conclusion: Supplementation of *Eurycoma longifolia Jack* at a dosage of 150 $mg.day^{-1}$ for 7 days has not provided any beneficial effects on endurance running performance and physiological responses of recreational athletes in the heat.

The Effectiveness of Caffeine, Nap, or Exercise on Cognitive Function and Anaerobic Performance: A Pilot Study

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Objectives: The purpose of this study was to examine the effects of 160mg of caffeine, a 30-minute nap or rest period, or 20 minutes of dynamic exercise on anaerobic performance and cognitive function.

Methods: 10 college aged students (20.7±0.67yr, 82.85±20.20kg) completed two trials (control, experimental) separated by 48 hours. Both trials were completed in a semi-fasted, caffeine-free state. Participants were randomly assigned to one of four groups: control (CON), caffeine (CAFF), nap (NAP), or exercise (EXR). During each trial (control, experimental) participants were asked to complete three separate measures of anaerobic power (Sargent Vertical Jump Reach Test, Margaria-Kalmen Test, 30 second Wingate Test). Heart rate (HR), rating of perceived exertion (RPE), power output, blood glucose, and cognitive function (i.e., non-verbal memory, attention, and reaction time) were measured during both trials.

Results and Conclusions: Power analyses demonstrated that based on the preliminary data a sample size of 84 subjects would be needed to obtain a power of 0.95 with significance set a priori $p=0.05$. Additionally trial (control, experimental) by group (CON, CAFF, NAP, EXR) repeated measures ANOVAs revealed a significant interaction for power output (Watts·kg-^{1}) during the Margaria-Kalamen test, ($p=0.05$). Trends towards significance were also demonstrated for power output (Watts) during the Margaria-Kalamen test ($p=0.08$) and HR following the Wingate test ($p=0.078$). From this data it appears that the addition of caffeine, nap, or exercise exhibits some effect on power output. Further investigation is necessary to determine the significance of each treatment.

Can Pedometers Encourage *Elementary School Children* to Increase their Levels of Physically Activity?

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Objective: The purpose of this study was to examine the effects of using pedometers on the activity levels of grade 5 and 6 children during a school semester. Additionally, children using pedometers with constant visual feedback were compared to those wearing pedometers with limited feedback (related to step counts). Minutes of physical activity (duration and intensity) and sedentary time were also gathered.

Method: Participants were recruited from five elementary schools belonging to one school board in Northern Ontario Canada (n = 161). A three-stage time-series design was used. Grade five and six participants were individually randomized to *Feedback* (2 weeks), *No Feedback* (2 weeks) and *No Pedometers* (2 weeks). The six-week cycle was completed twice from September to December (12 weeks). Pre and post data in activity types, duration and intensity were gathered during weekdays and weekends for all measures.

Results: The recorded groups steps with constant feedback conditions was 4200 steps more than the no-feedback group but not significant (p = 0. 086). During the fourteen-week study, subjects accumulated about 7000 steps per day. Following post-test, the experimental groups reported an increase of 20 minutes of activity and a reduction of 74 minutes of sedentary activity per week while the control group recorded a mean decrease in activity of 50 minutes along with no change in time spent watching television, playing video games or working on the computer. Scores did not reveal any changes in the intensity of physical activity.

Conclusions: This study confirmed that a pedometer alone is not a panacea but with proper motivation, school-wide hype and incentives it could be part of the remedy. Future studies with pedometers should recognize individual variability in physical activity.

Gastrocnemius Stretching in Non-Weight Bearing and Weight Bearing is equally effective for Improving Ankle Dorsiflexion Range of Motion

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Objective: To determine if gastrocnemius stretching in non-weight bearing (NWB) or weight bearing (WB) results in a greater increase of ankle dorsiflexion passive range of motion (DF PROM).

Methods: The study was a three-way mixed model design. 28 healthy volunteers between 18-55 years old who exhibited less than 10 degrees of ankle DF PROM were recruited. Subjects were randomized into two stretching groups: non-weight bearing (NWB) and weight bearing (WB). Subjects' ankle DF PROM was measured with a blinded standard goniometer in NWB and WB positions before and after participation in a 3-week home gastrocnemius stretching program. Investigators performing the ankle dorsiflexion measurements were blinded to subjects' stretching group.

Results: Two three-way mixed model analyses of variance demonstrated no significant difference in DF PROM between the NWB and WB groups for either the NWB measurement condition ($F=0.484$, $df=1.0$, $p=0.493$) or WB measurement condition ($F=0.031$, $df=1.0$, $p=0.861$). Regardless of group, subjects had greater DF PROM measured in either the NWB or WB condition at post-test than pre-test.

Conclusion: Gastrocnemius stretching exercises performed in NWB or WB were equally effective in increasing ankle DF PROM.

The Effect of Foot Placement on Height of Vertical Jump

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Objective. The height of vertical jump maybe increased at specific foot placements because of increasing muscle's physiological advantage. The purpose of this study was to compare vertical jump height at normal feet position(15° external rotation)(N),15° internal rotation (parallel feet position) (Par), 30° internal rotation (IR) and free jumping position (F).

Methods. This pre-experimental study was performed on 118 volunteered subjects of both sexes, ages 19-27. The sargent protocol starting from a graded plate was used to measure height of jumps. The first three jumps were performed from (F). The order of other trials was randomly assigned and the three jumps from a similar position were performed successively with one minute rest interval. The highest jump at each position was selected. One-way ANOVA and Duncan's post Hoc tests were used for data analysis.

Results. The jumping test results at males and females were as follows respectively: (F); 55.68±6.264 & 37.44±5.160, (Par); 54.41±5.934 & 57.05±4.847, (N); 54.05±6.036 & 36.88±5.093, (IR); 52.97±5.887 & 36.27±5.075 (cm).

Conclusions. Though the height of jump differences were not statistically significant at different foot placements ($\alpha \leq 0.05$), the data for male and female leaning exactly to the same direction from high to low order ((F)> (Par)> (N)> (IR)). The difference between jump heights at different foot placements may become meaningful and relevant in the case of increasing the number of subjects or training at a specific position which could be more researched. The results show some of the foot placements particularly an optimal of about 15° internal rotated feet (Parallel feet position)enhances jumping results without any training need. A free jumping position result is not reliable for testing because of its great deviation.

Effects of a FITT Lunch

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Background: According to the American Dietetic Association fitting in fitness during the work day can create a needed time slot for exercise. Finding times to develop lifestyle changes that promote optimal fitness was the foundation for creating the FITT (frequency, intensity, time, type of activity) Lunch Exercise Program.

Objective: This small pilot study explored whether employees of Saint Joseph's College would benefit from participating in an exercise program during their lunch hour.

Methods: Exercise Physiology seniors assisted in the pilot study as an application of knowledge and research experience. Nine sedentary staff members and one community member, age ranging from 24 - 73 years of age, volunteered for the 4wk, 3days a week, and 50 minute sessions for the FITT Lunch Exercise Program. Each participant was randomly selected with a student trainer. All were given a pre-post test of blood pressure, heart rate, body composition (4 sites, triceps, biceps, sub scapular and supra iliac) and the Stroop Color and Word Test. Nine volunteers completed pre-post test of sit-ups, push-ups, flexibility, 1RM of upper/lower body, a 12 minute walk/run with one given a pre-post senior assessment test of 30 sec., chair stand, 5lb arm curls for 45 sec., chair sit-n-reach, back scratch, 8 foot up-n-go, and the 6 minute walk. Each participant received an EXRX (exercise prescription) designed specifically for their identified goal(s) and was monitored with incremental increases by their student trainer.

Results: Of the 10 subjects all completed the 4 week program. Two subjects were unable to post test for the 12minute walk/run do to work and illness. All areas of measure showed remarkable increases: Upper body 16%, lower body 63%, push-ups 38%, sit-ups 33%, 12minute walk/run 11%, flexibility 3%, Stroop Color/Word 8%, and decreases in skin folds: triceps 19%, biceps 20%, supra iliac 16.7% and sub scapular 6%. The senior subject reported significant improvements 30sec. chair stand 7%, 5lb arm curl 213%, chair sit-n-reach 83%, 8foot up-n-go 26.5%, 6minute walk 143%, with the back scratch showing no improvements at -3. Qualitative components were also recognized with subjects reporting more energy, feeling stronger, sleeping better, etc.

Conclusion: All subjects noted significant improvements over the 4 wk program and wanted to continue the lunch workout. A grant for the FITT Lunch has been proposed for fall 2010 to include at least 50 participants.

Effects of Trunk Muscle Exercise Programes and Pain Relife in Older Korean Patients of Low Back Pain

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This study was aimed to compare the effect of lumbar exercise programs in older low back pain patients. Subjects were recruited from a local hospital and divided into Medx Exercise group(MEG) (males: n=11, 65.18+2.6years, 172.00+4.2cm, 73.36+7.1kg; females: n=14, 64.64+2.7 years, 157.57+3.6 cm, 61.29+8.7 kg) and Home-based exercise group (HBEG) (males: n=7, 64.14+2.3 years, 170.14+2.3cm, 70.14+8.4 kg; females: n=15, 64.67+2.1 years, 155.47+4.9 cm, 59.13+6.6 kg). MEG received resistance training twice a week. HBRG were instructed and encouraged to continue the exercise program at home at least three time a week for 30 min with instruction manual. Both groups were tested on a Medx machine at baseline and after 8 weeks for lumbar extension strength at 0º, 12º, 24º, 36º, 48º, 60º and 72º. A Group*Angle*Time ANOVA with repeated measures on the second and third factors was used to determine differences in strength within gender. In the men, peak torque of MEG was higher during the post-test at almost all angles (generally $p<0.001$). Between groups, there were significant differences at 0º angle ($p>0.01$). In the women, the peak torque of both group was higher during the post-test (generally $p<0.01$). there were significant group differences at all angles($p>0.01$). MEG decrease significantly subjective pain rate after training in both gender ($p<0.001$), group differences in female was indicated during post-test. Resistance training even in HBRG is a viable alternative to older low back pain patients and deserves consideration by exercise specialists.

The Effect of Teacher and Peers Need Support in Physical Education on Students' Leisure Time Physical Activity Behaviour

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Objectives. The aim of this study was to investigate the effects of need support from both teacher and peers in physical education (PE) lessons on students' leisure time physical activity. In line with Self-determination Theory, it was hypothesized that basic psychological needs for competence, autonomy, and relatedness mediate the relationships between need support from both teacher and peers and students' autonomous motivation, controlled motivation, and amotivation in physical education. Different types of motivation, in turn, would affect students' leisure time physical activity behaviour.

Methods. Estonian secondary school students (N = 548; M age = 13.57 years; SD = .61) completed questionnaires assessing perceived need support from both PE teacher and peers, as well as their perceptions of competence, autonomy, and relatedness, different types of motivation in PE and leisure time physical activity behaviour.

Results. Structural equation modeling revealed support for a mediational effect. Specifically, results indicated perceptions of need support from both PE teacher and peers to positively predict all three needs while perceptions of need support from the teacher exhibited strongest effect on students' autonomy and competence satisfaction, whereas need support from the peers influenced most strongly the need for relatedness. All three needs predicted positively both autonomous and controlled motivation, whereas needs for autonomy and competence negatively predicted amotivation. Only autonomous motivation, however, had significant and positive effect on students' leisure time physical activity behaviour. Overall, results indicated that the total effects of need support from teacher (β = .13, t = 4.62, p < .01) and peers (β = .04, t = 2.73, p < .01) on leisure time physical activity behaviour were indirect through psychological needs satisfaction and autonomous motivation.

Conclusions. Results seem to suggest that need support from both teacher and peers in PE is effective in promoting students' leisure time physical activity behaviour.

Adolescent Obesity:
Examining Students' Attitudes & Values toward Physical Activity

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This investigation examined male and female 10th grade high school students' attitudes and values to physical education and physical activity as a variable in adolescent obesity. Attitudes and values were measured through the use of questionnaires which focused on behavioural, cognitive, and affective sub-domains. Questions were further categorized according to whether they referred to "school-based" physical education or "extra-curricular" physical activity, and other factors such as "skill level" and "sporting experience" were also examined. Results of the survey strongly supported the hypothesis that 10th grade students' attitudes and values toward physical education in school and physical activity (in general) influence their physical activity behaviour patterns and level of overweight and overfatness.

Students who had a lower Body Mass Index (BMI) responded more favourably in all questionnaire items regardless of whether they were cognitive, behavioural or affective in nature. Interestingly, the majority of students (even those whose BMI was categorized as "normal") believed they were not skilled enough in sports to fully enjoy school-based physical education.

Furthermore, those with a higher BMI were less likely to continue school-based physical education when it becomes optional and is no longer required for a high school graduation diploma.

The fact that attitudes are learned suggests that educators could play an important role in influencing them. While teachers are unable to do much about extra-curricular physical activity, they can do something about the physical education offered in schools. Results of the study suggest that there must be a greater range of activities from which to choose including sports which do not demand highly developed motor skills, but emphasize fitness and health. By making school-based physical education more interesting and exciting, it will hopefully become more enjoyable and all will benefit from this important subject; the resultant effect being healthier adolescents and lower incidence of obesity.

Relation between the Level of Physical Activity and Fitness Level in the Elderly

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Objectives: The objectives of this study is to investigate the relation between the measured fitness level by the US *Senior Fitness Test* (SFT) and the declared level of physical activity by un rapid assessment questionnaire (ESNAP).

Methods: Subjects are recruited by the Sports for all French Federation in 13 various French counties among their members or during action of physical activity promotion within the general population. The ESNAP questionnaire contains 5 coherent questions with the national Guidelines for physical activity. The SFT protocol has been respected (Rikli et Jones, 1999; 2001). *Mindeval software* has been used to collect and clean the data of the tests results and to fill the questionnaire answers. To compare the relation between the measured fitness level and the declared level of physical activity, student T test and Anova have been used. The PLSD Fisher test has been done as post hoc analysis.

Results: Between March and April 2009, 1237 men and women, aged 60 to 89 years, have been involved in the study. The average age was 69,7 for women and 70,8 for men. The results show significant correlations between the declared level of physical activity measured by ESNAP Questionnaire and the measured fitness level : 30-Second chair stand (r= 0,22, p= 0,01, N= 1234), Arm curl (r= 0 ,24, p= 0,01, N= 1230), 6 minute walk (r= 0,30, p= 0,01, N= 717), 2 minute step (r= 0,25, p= 0,01, N= 506), Chair sit-and-reach (r= 0,09, p= 0,01, N= 1233), Back Scratch (r= 0,09, p= 0,01, N= 1224), 8-Foot Up-and-Go (r= -0,21, p= 0,01, N= 1236).

Conclusions: Seniors who are physically active have better results at the Senior Fitness tests. In a health promotion perspective, the ESNAP Questionnaire could be a first very useful prognostic tool for the doctor or the nurse.

Two-year Fitness Outcomes Comparison: PE4Life Academy vs. Traditional PE

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Objectives: This study was intended to compare fitness levels of students participating in a PE4life Academy physical education (PE) program and those in a traditional PE model. PE4life Academies are known for their focus on health-related fitness, whereas, traditional programs focus mainly on competitive sports. Differences in student fitness levels between the two programs have rarely been reported.

Methods: Participants were 211 seventh graders; 130 students from a PE4life Academy (School1) and 81 from a nearby school with a traditional PE program (School2). The two schools are similar in socioeconomic status, race composition (white>86%), and weekly PE class time (105 minutes vs. 82 minutes). The 7^{th} grade cohort completed five fitness tests: PACER, curl-ups, push-ups and sit-and-reach (right and left). Pre and post-tests were administered during the 2007-2008 and 2008-2009 school years. Fitness test results were compared using univariate analysis of variance (ANOVA), controlling for the pretest scores.

Results: Year one, ANOVAs yielded a highly significant difference ($p<.01$) in adjusted means in favor of School1 on the PACER (34 ± 0.76 vs. 29.59 ± 0.96) and push-ups (11.37 ± 0.49 vs. 7.83 ± 0.60) and a significant difference ($p<.05$) for curl-ups (46.85 ± 1.91 vs. 41.69 ± 2.44). However, highly significant differences were also found in favor of school2 in the sit-and-reach right (10.45 ± 0.16 vs. 11.22 ± 0.20) and left (10.28 ± 0.17 vs. 11.27 ± 0.21). Year 2, results were also highly significant for school1 regarding PACER (38.44 ± 0.93 vs. 32.39 ± 1.23), curl-ups (53.41 ± 1.50 vs. 44.28 ± 1.96) and push-ups (12.88 ± 0.41 vs. 10.94 ± 0.53). However, sit-and-reach right (9.77 ± 0.18 vs.11.21 ± 0.21) and left (10.11 ± 0.19 vs. 10.81 ± 0.23) were highly significant and significant, respectively, again in favor of school2.

Conclusions: Compared with a traditional PE program, the PE4life Academy demonstrates a significantly positive impact on students' cardiovascular and muscular strength/endurance. This may be attributed to its focus on fitness instead of sports. However, more work is needed by PE4life to address all five components of fitness.

Efficacy of Purslane extract in Prevention of Delayed Onset of Muscle Soreness (DOMS) after one Session of Eccentric Training

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In ancient Greece, Portulaca Oleracea or Purslane Herb was important medicinal herb. It has been reported to be the richest vegetable source of omega-3 fatty acids and distributed widely in the world. It is also high in tocophenals, beta-carotene, vitamin C, riboflavin, essential amino acids, glutathione and minerals (P, Z, Mn, Cu, Mg and Ca). There are evidences of effectiveness of Purslane on muscle relaxation, anti-microbial, wound healing. Objective: The objective of this study was to determine the influence of ingestion of extracted Purslane leaves on muscle soreness after one session training. Methods: Twenty young male non-athlete students were selected for this randomized double-blind trial. Experimental group received Purslane (n = 10), 1500 mg/day three times a day, 72 before training and 48 hours after training and control (n = 10) received placebo by oral. Muscle soreness training protocol was performed by 45 minutes step test. Serum LDH, CPK as well as thigh circumstance, knee flexibility, and pain perception was determined in 72 hours before training, immediately, 24 and 48 hours after training. Results: LDH in 48 h after training shown significant difference between control and experimental ($P<0.05$). Even though the level of CPK was higher in control compare to experimental group but the difference was not significant. The level of pain perception, 48 h after treatment in the experimental group after 48 h was significantly lower ($P<0.005$) and thigh circumstance (TC) was significantly higher in both groups until 48 h compare to the base level but only TC was significantly lower in the control group after 48 h. The knee motion range was significantly lower in both groups but after 48 h in the experimental was not significant. Cumulative from the results we concluded that the Purslane was effective in prevention of muscle soreness after one session of eccentric training.

Using Social Cognitive Theory to Predict Leisure Time Physical Activity and Dietary Behaviors among Middle aged Asian Indian Women

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Objectives: The objective of the study was to determine to what extent expectations, self-control, and self-efficacy from the social cognitive theory account for variance in leisure time physical activity and selected dietary behaviors of middle aged Asian Indian women residing in United States. Dietary behaviors consisted of fruit and vegetable consumption and number of portions consumed.

Methods: Data were collected from a sample of 200 participants in Chicago over a span of one month at a Hindu temple. Valid and reliable subscales were developed for the study. Descriptive statistics, stepwise multiple regressions, and Pearson correlations were used to analyze the data.

Results: Results indicated that these womenparticipated in 21.97 minutes of leisure time physical activity and consumed 3.5 servings of fruits and vegetables which is less than the USDA guidelines. Expectations for leisure time physical activity, education and self control were predictive for leisure time physical activity (adjusted $R^2 = 0.14$). Number of years of residence in the United States was significant for fruit and vegetable consumption. The highly educated Asian Indian women were, the less likely they were to engage in leisure time physical activity. Fruit and vegetable consumption decreased as number of years in the United States increased. No significant associations were seen with the constructs of the social cognitive theory with number of portions consumed and fruits and vegetables consumed.

Conclusions: Expectations increase the amount of physical activity Asian Indian women engage in, while the opposite is true for education and self-control. A need exists for future studies exploring expectations and self control with leisure time physical activity, fruit and vegetable consumption and portion size in this target population.

Influence of Age, Sex, and Race on Exercise Motivation for College Students

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Objective: Authors examined differences in exercise motivation between age, gender, and race for college students. Participants: Students from 200 sections of physical activity classes at a midsize university were recruited (n= 2,199; 1,081 men, 1,118 women) and volunteered to complete the Exercise Motivation Inventory (EMI-2).

Methods: Quantitative, cross-sectional descriptive research design was employed. Results: Significant differences were found in three of 14 exercise motivational subscales by age (affiliation, health pressures and ill health avoidance $p<0.05$). Males were motivated by intrinsic factors (strength, competition and challenge) ($p<0.05$), while females were motivated by extrinsic factors (i.e. weight management and appearance) ($p<0.05$); only two subscales proved not to be significant by gender. Race differences provided eight significant differences by exercise motivations ($p<0.05$).

Conclusions: Significant differences for exercise motivations in college-aged population by demographics were documented. Understanding these differences is important for college health professionals for programming strategies and promoting physical activity.

Comparison of Eight Abdominal Exercises using EMG, RPE, and Exercise Preference

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Objectives: To evaluate the effects of 8 different exercises on the myoelectric activity of the upper (URA) and lower rectus abdominis (LRA). Exercise preferences were also obtained.

Methods: Twenty-nine men (n=12) and women (n=17) aged 19.6±1.0y performed 8 randomly assigned abdominal muscle exercises: sit-up, crunch, Ab-Rocket, Bender Ball, Bean, Ab-Lounge, Ab-sling, and Stability Ball. Each participant performed 1 exercise per day on 8 nonconsecutive days. Each exercise was performed for 60 repetitions or until failure at a cadence of 20 repetitions per minute. Surface electromyography (EMG) was recorded from the URA and LRA during each repetition. ANOVA with repeated measures compared EMG activity between exercises during the 10^{th} repetition. Significance level was set at $p \leq 0.05$ Participants also completed a questionnaire regarding their exercise preference and likelihood of equipment purchase.

Results: For the URA, the order of exercises from most to least EMG activity was; Ab-Sling, Ab-Rocket, crunch, sit-up, Stability ball, Bender Ball, Ab-Lounge, and Bean. The Ab-sling produced higher URA EMG activity than all other exercises ($p<0.05$). For the LRA, the order of exercises from most to least EMG activity was; Ab-Sling, sit-up, Ab-Rocket, crunch, Swiss Ball, Bender Ball, Ab-Lounge, and Bean. The Ab-Sling produced higher EMG activity than all the other exercises ($p<0.05$) except the sit-up. Survey data revealed that 74% of participants would neither use nor purchase the Ab-sling or Ab-Rocket.

Conclusions: For the 8 exercises examined in this study, the Ab-Sling, Ab-Rocket, crunch, and sit-up produced the most muscle activation in URA and LRA, but because participants would neither purchase nor use the Ab-Sling or Ab-Rocket, the sit-up or crunch should be prescribed for rectus abdominis exercise.

The Effects of Physical Education on Aerobic Capacity and Body Composition of Sixth Grade Pupils

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The purpose of this study was to determine what effect the number of days per week in physical education (PE) classes had on the aerobic capacity and body composition of sixth grade pupils. The participants in the study were 789 (379 females, 410 males) 6th grade pupils from a rural county in the mid-southern United States participating in a university "Fit for Life" program. The average age of the pupils who participated in the study was 11.70 years. All pupils either participated in PE classes a) zero days, b) one day, c) three days, or d) five days per week. Pupils were pre-tested at the beginning of the school year and post-tested at the end of the same year examining aerobic capacity and body composition to determine significant differences, if any, in relation to the number of times per weeks the pupils participated in PE. Results of the study indicate a significant difference in aerobic capacity (p = 0.0010) and body composition (p = 0.0001) when examining the relationship between the number of days a pupil participates in PE. Furthermore, trends indicate that the pupils who participated in PE 5 times per week showed an improvement in aerobic capacity while those pupils who participated in PE 3-5 days a week showed improvement in overall body composition. This study indicates that regular participation in PE classes can increase pupil's aerobic capacity and body composition.

FITNESSGRAM® Health-Related Physical Fitness in South African Children

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Objectives: FITNESSGRAM® is a school-age assessment of health-related physical fitness used in the USA and in >20 countries. Participants complete health-related fitness components, including cardiorespiratory endurance (CE), body composition (BC), and musculoskeletal strength and endurance (MSE). Results are interpreted with health-related criterion-referenced standards. Based on results, students are identified as in the Healthy Fitness Zone (HFZ) or needing improvement in each fitness component. The purpose was to assess health-related fitness in South African children.

Methods: 1969 South African children (5-13 yr; M = 9.5 ±2.5 yr) completed FITNESSGRAM® items including the PACER test of CE, BMI and skinfolds tests of BC, and curl-ups to determine abdominal MSE. Children ages 10-13 completed the PACER as there are no HFZ standards for younger children. Published FITNESSGRAM® procedures were followed. Results were compared to FITNESSGRAM® HFZs by gender and age.

Results: With the exception of 10-year-old girls, less than 50% of boys and girls meet PACER CE HFZ standards. Girls' CE achievement is better than boys at each age (10-13). Approximately 80% or more of girls and boys achieve the BC HFZ, whether with BMI or skinfolds to estimate body fat percentage. Achievement of BC standards generally declines across ages (from over 90% to approximately 80% for most ages and both genders) regardless of the BC measure used. Prevalence of girls achieving the BC HFZ standards is typically greater than boys. Achievement of the curl-up MSE standard is a function of age and gender. Approximately 50% or more of boys and girls ages 6-10 achieve MSE HFZ standards. Approximately 40% of younger (age 5) and older (ages 11-13) meet the MSE HFZ.

Conclusions: Results are similar to health-related fitness reports in other countries, illustrating that achievement of HFZs suggests important potential health consequences generalize to boys and girls even across cultures.

Close Relationship between Bone Strength and Mass in Jumping Exercised Rats

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Objective: This study investigates the effects of 8 weeks of combined jumping exercise and honey supplementation on bone mineral density (BMD), cross-sectional cortical area, moment of inertia (CSMI) and maximum force of the tibia bones in young female rats.

Methods: Forty eight 12-week old female rats were divided into four groups: Sedentary without supplementation control group (C), sedentary with honey supplementation group (H), jumping exercise group (J), and combined jumping exercise and honey supplementation group (JH). Jumping exercise consisted of 40 J/day for 5 days/week at the height of 40 cm. Oral honey supplementation was given to the rats at the dosage of 1g/kg body weight/rat/day, for 7 days/week. At the end of the study, proximal volumetric total BMD, trabecular BMD, mid shaft cortical volumetric BMD, cross-sectional area, cross-sectional moment of inertia, and maximum force of the left tibia were measured for comparison. Data were analysed using one-way ANOVA.

Results: No significant differences were observed in tibial proximal total BMD and trabecular BMD in H, J, and JH groups compared with the control (C) group. J group elicited significant greater tibial mid shaft cortical volumetric BMD compared with C group ($p<0.05$). There were significant greater tibial mid shaft cortical area and CSMI in JH group than that in the C and H groups ($p<0.05$). JH group exhibited highest tibial proximal total and trabecular BMD, mid shaft cortical area and CSMI values among the groups. Similarly, tibial maximum force value was significantly greater in JH compared to C group and H group respectively.

Conclusion: These findings suggest that a combination of jumping exercise and honey supplementation elicited synergistic beneficial effects on tibial BMD, geometry

and maximum force in general compared to jumping exercise or honey supplementation alone in rats.

The overweight and Obesity in Czech Children: The Relation to motor Proficiency

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The aim of this study was to examine the association between low motor competency and excessive body weight, i.e. overweight and obesity, in the population of Czech younger school-age children. In addition, gender was examined as a potential factor in the association betwen motor competency and body weight.

A representative sample of Czech 7-10 year-old children (n=404, 213 boys, 191 girls) was assessed on motor proficiency using the Movement Assessment Battery for Children - MABC-2 (Henderson et al., 2007), and body weight using the body mass index (BMI) evaluated according to age and gender-adjusted norms (Vignerová et al., 2001). Differences in BMI of children with low motor competency (indicated by ≤ 15th percentile of the MABC total score, as the risk of developmental coordination disorder - DCD) and children with normal competency (P>15th percentile of the MABC score) were tested.

Excessive body weight was found in 18.8 % of Czech children. The difference of BMI in the children with low and normal motor competency (17.4± 2.8 vs. 17.5±2.7) was not significant. Gender did not seem to affect the association between motor competency and body weight as no significant differences of the BMI in the subjects with low and normal motor competency tested separately for boys and girls were found (17.3± 2.4 vs. 17.5±2.7, and 17.6± 3.4 vs. 17.4±2.8, resp.).

The study suggested that low motor competency can be a risk for excessive body weight as early as the younger school age, and this risk can increase with age, likely due to decreasing physical activity from pre-pubescence to pubescence.

A Profile of Women aged between 25-65 Years, Consisting of their Status in Relation to Physical Activity, Overweight and Obesity, Smoking, and Knowledge of Cardiovascular Disease

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Objectives: The objective was to profile a sample of apparently healthy women across the age span 25-65 years, in relation to physical activity, overweight and obesity, screening behaviour, smoking, and cardiovascular disease knowledge; furthermore, to investigate perceptions of physical fitness, and body weight status in relation to health.

Methods: A cross-sectional survey was undertaken via a questionnaire distributed to women living in one urban locality of the UK. Convenience sampling facilitated access to women in places of employment, social clubs, leisure centres and other meeting places. One thousand, six hundred distributed questionnaires yielded a return of 724 (55.6% response rate). Participants' were requested to self-report their physical activity based on a seven day re-call item. Self-reported mass, height and waist circumference facilitated estimation of body mass index (BMI) and waist adiposity. Multiple choice items were included to investigate knowledge of cardiovascular disease, and screening behaviour. Participants' perceptions of their physical fitness were compared against their activity levels. Their perceptions of their body weight as healthy or unhealthy were compared against their BMI. Percentage results for each item were calculated for the overall sample, and for two groups, consisting of women 25-45 years, and women 46-65 years.

Results: The results highlighted five areas of concern: a high level of overweight and obesity, poor adherence to current physical activity guidelines, misperceptions of cardiovascular risk, poor uptake of screening services and a patchy knowledge of cardiovascular disease. Smoking prevalence was 15%.

Older women were less likely to be active, and held more misperceptions of their physical activity status.

Conclusions: Women's knowledge of cardiovascular disease is not reflected in risk-avoidance behaviour. The findings confirm a need to specifically target women's participation in physical activity through diverse channels of communication, to address misperceptions, and to explore the cognitions underpinning women's perceived susceptibility to cardiovascular disease.

Accuracy of the Omron HJ-720 ITC Pedometer when Worn at Four Different Locations on the Body

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Can the Five Step Strategy Enhance the Learning of Motor Skills in Older Adults?

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Objective: The ***Five-Step Strategy*** (FSS) consists of (a) readying oneself, (b) imaging the desired outcome, (c) focusing on the task at hand, (d) freeing the mind, and (e) evaluating the outcome afterward. This study examined its usefulness as an instructional aid for older adults. Because some (Molander & Backman, 1989) have found that older adults have more anxiety during competitive sport experiences, another purpose was to examine whether the FSS can reduce anxiety.

Methods: One group used the FSS when learning a golf putt; a second learned the putt without using the FSS. Participants putted for three 1-hr sessions across three weeks. Performance and anxiety were assessed before the first and after the second and third sessions.

Results: Retention scores revealed that the FSS group learned the task better than the control group did, $t(27) = 6.63$, $p < .001$.

Conclusions: These findings suggest that the FSS should help older adults learn motor skills.

Body Composition Standards for College Youth

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Introduction

Body composition is considered to be an important measure of health fitness. A high percentage of body fat relative to bone and muscle has been shown repeatedly to be predictor of wide range of degenerative diseases. Body composition is much better measure of health fitness. Suitable body composition is important for general health and appearance for maximizing athletic performance. For these reasons accurate measurements of body components are needed to develop sound preventive health and athletic programme.

Objectives

The purpose of present study was to prepare the body composition standards for the college youth of Delhi state on the basis of their age. Another purpose of the study was to compare the selected body composition variables of college youth on the basis of their age.

Methods

For the purpose of present study 5000 adult males of Delhi were selected randomly as the subjects for the study. The age of the subjects were ranging from 18-25years. Analysis of variance was employed to compare the subjects belonging to different age groups on selected variables. Percentile scales were used to prepare the standards for body composition.

Results & Discussion

Based on the findings of the study following conclusions were drawn: Significant difference was found among all age groups in relation to Body Density, Body Fat Percentage, Body Mass Index, Fat Mass and Skin folds thickness (Chest, Triceps, Sub scapular and Sum of three skin folds). Since analysis of variance was found significant in all the variables Scheffe's post hoc test was applied to test the inter group variability. Post hoc test revealed that variability does not exist between two adjacent groups on almost all the variables except in case of few variables. Variability is maximum between the two extreme groups (between 18 years and 25 years age group) than any other group. Variability between two groups tends to increase with the increase in distance between the two age groups. This also revealed that at least two years time might be required to put on some significant fat percentage in college youth. This again may due to the fact that youth in the colleges are generally active even without doing any notable physical activity they don't put on extra fat on their body.

The Long Term Monitoring of the Knee Angle in Asymptomatic Participants: A Spectrum Analysis

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Objectives: Range of movement (ROM) of clinical groups is routinely measured in a laboratory or clinical setting. It is suggested that due to the Hawthorne effect this may not accurately reflect their ROM over a 24 hour period. The objective of the investigation was to determine if the long term monitoring of the knee angle was logistically possible away from the laboratory environment, and to obtain a normative data set of the knee angle during seven hours of ambulation in asymptomatic participants.

Methods: Flexible electrogoniometry was used to monitor the right knee flexion angle in the sagittal plane using a portable data logger, configured at a sampling rate of 200Hz. Participants (n = 10) were fitted with the system at a mean of 8.02 am ± 0.03 hours in the laboratory and subsequently asked to return seven hours later with a view to obtaining a representative sample of their normal ROM during an average day, away from clinical observation.

Results: Mean findings suggested that the largest percentage duration of the seven hour monitoring period was spent between ≥ 20 - < 40° (27.30%) of flexion. There was a mean reduction trend in 10° increments of 1.88% ± 0.91% between the flexion angles of 20° and 110°. Only 0.31% of the monitoring period was spent at a flexion of ≥ 100°, suggesting few deep knee flexion activities undertaken. The mean velocity spectrum showed that 43.23% ± 1.71% of the monitoring time participants flexed their knee between 0 – 100°/s, with mean extension between 0 - 100°/s calculated at 42.77% ± 2.48%.

Conclusions: The investigation provides a valid, repeatable, and cost effective method of long term angular monitoring, with the potential for development to examine 24 hour patterns of movement. This system could be used to monitor and compare clinical populations in the outpatient setting.

Differentiation of Simple Stepping Reactions by Increasing of the Task of Difficulty

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Objective: The study investigates whether the increasing of the task of difficulty during reactive step execution would better differentiate the simple foot reactions among healthy young individuals.

Methods: A group of 38 students (age 20.8±3.7 y, height 178.8±7.9 cm, and weight 72.6±9.7 kg) performed three different tests of simple stepping reactions to visual stimuli. While the step execution in the first test began from standing position, the chair rising was included into the second and third test (sit-to-stand-to-step and stand-to-sit-to-stand-to-step, respectively). Subjects stood on two mattresses placed in front of the light signal and on the light switch performed two steps (starting with dominant leg) to mattresses (with 30 cm sides) marked with tape on a floor with a 60-70 cm distance in-between. They were instructed to perform the steps as fast as they could. In order to eliminate the learning effect, subjects were allowed to practice the measurement procedure beforehand. The test consisted of 3 trials while the best result was used for the analysis. The time of foot off – T1 (onset of unloading) and foot contact time – T2 (from foot-off to foot-contact) of the first step were recorded by means of the FiTRO Reaction Check.

Results: The time of foot off was significantly ($p \leq 0.01$) shorter in the single step (1026.0±83.6 ms) when compared to sit-to-stand-to-step (1297.4±168.6 ms) and stand-to-sit-to-stand-to-step (1620.0±208.2 ms). On the other hand, no differences were found in the foot contact time between these tests (368.1±62.2 ms, 358.8±57.9 ms, and 350.5±56.7 ms, respectively). Analysis of variance showed that differences do exist among the values of T1 for examined individuals at $p \leq 0.001$ only under more difficult testing conditions (2^{nd} and 3^{rd} test).

Conclusion: Increasing of the task of difficulty during reactive step execution better differentiate simple foot reactions among healthy young individuals.