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Vigorous physical activity is positively correlated with grade point average in college-age females

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The hippocampus shrinks in late adulthood, leading to impaired memory and increased risk for dementia.

PURPOSE: to verify if physical activity level, measured by International Physical Activity questioner (IPAQ), is correlated to hippocampus volume in Alzheimer Disease (AD), Mild Cognitive Impairment (MCI) and normal cognitive elderly (NC).

METHODS: 92 elderly were clinical evaluated and diagnosed in AD (15 subjects, age 76,3(4,7),MMSE =19,7 (5,9), MCI (42 subjects, age 70,7(5,8) MMSE 25,6(5,8) and NC (35 subjects, age 65,1(7,8), MMSE 28,5(1,8)). Structural MRI was collected on a 3.0 Tesla (Philips Achieve scanner) and freesurfer program was used to analyze hippocampus volume. All participants answered IPAQ. In order to verify if there was any relation between physical activity level and hippocampus volume, Pearson's correlation was performed.

RESULTS: Pearson's correlation showed IPAQ score relates with MMSE score ($r^2=0,3$, $p=0,5$) and IPAQ was also related with left and right hippocampus volume ($r^2=0,4$, $p=0,003$ and $r^2=0,4$, $p=0,002$, respectively). Separating the groups, IPAQ was related with right hippocampus volume in MCI ($r^2=0,5$, $p=0,02$).

CONCLUSIONS: The results suggest that physical activity level may have influence on hippocampus volume. And it may reduce the risk for developing AD, especially for those who present high risk, such as MCI group (although there are other biomarkers that have influence on developing this dementia).

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1708 Board #53 May 28, 3:30 PM - 5:00 PM

Self-Evaluative And Motivational Implications Of Fitness Testing At Schools: A Systematic Review

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(No relationships reported)

Fitness testing (FT) and body mass index assessments are widely prevalent practices in American schools, in many cases mandated by state law. Proponents argue that these are essential measures for the prevention of childhood obesity and "help students in starting life-long habits of regular physical activity" (CA DoE). Critics have long maintained that the tests may have detrimental effects if sensitive self-evaluations and social-psychological factors, such as peer comparisons, are not considered. Since FT represents the first exposure to the link between physical fitness and health for millions of children, basing public policy on a strong empirical foundation is essential.

PURPOSE: To conduct a systematic review on the effects of FT on self-evaluative and motivational outcomes among children.

METHODS: A search of PsycINFO, PubMed, and Web of Science was conducted in 10/2014. Keywords used included: (FT, Fitnessgram) and (children, youth, school) and (self, esteem, efficacy, competence, enjoyment, motivation, intention).

RESULTS: Initial searches yielded 236 results. After reviewing abstracts, 20 articles satisfied inclusion criteria. Fourteen of these were excluded after full-text review. Of the 6 remaining studies, 3 were experimental (measuring motivation after FT) while 3 were descriptive (measuring attitudes about FT or self-perceptions in relation to FT). Studies showed low-to-moderate levels of enjoyment associated with FT. In addition, children who scored lower on FT or were not in the "healthy fitness zone" reported lower enjoyment or intrinsic motivation than those in the zone. This effect may be mediated by perceived competence. One study showed that positive feedback produced higher levels of enjoyment compared to no feedback or negative feedback.

CONCLUSION: For a practice implemented on a nationwide scale, there is a remarkable dearth of empirical evidence that FT can accomplish the goal of promoting lifelong physical activity. The extremely limited extant evidence suggests that children who perform more poorly may be at increased risk of negative self-evaluations and reduced motivational outcomes. This systematic review highlights the urgent need for a research agenda aimed at elucidating the self-evaluative and motivational consequences of FT among schoolchildren.

1709 Board #54 May 28, 3:30 PM - 5:00 PM

Vigorous Physical Activity is Positively Correlated With Grade Point Average in College-Age Females

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A growing body of evidence suggests that regular physical activity is positively correlated to academic achievement in children and adolescents. Among college students, few studies have examined the relationship between overall physical activity levels and academic achievement - generally reflected in grade point average.

PURPOSE: The purpose of this study was to determine if typical weekly physical activity (PA) levels were correlated with academic performance among full-time college-aged females during the spring semester.

METHODS: Thirty full-time, female (18-23 years) students enrolled in one of several upper Midwest universities, and who did not participate in a varsity sport, were recruited for the study. Walking and moderate and vigorous intensity PA (METs/week) were assessed by the validated International Physical Activity Questionnaire short form (IPAQ). Grade point average (GPA) was obtained by self-report questionnaire, along with age, year in school, number of classes in spring semester, class hours per day, study hours per day, and working (employment) hours per week.

RESULTS: The participants reported a mean GPA of 3.2 (± 0.4), were enrolled in 4.2 (± 0.5) semester courses and studied 2.8 (± 1.0) hours per day. The participants reported the following METs per week of activity: 1436.1 (± 739.2) walking, 244.7 (± 695.6) moderate intensity PA, 1877.3 (± 1438.6) vigorous intensity PA, and 3566.7 (± 2005.1) total PA. After controlling for hours studying, there was a significant positive bivariate correlation between GPA and total physical activity METs ($r=0.802$; $p=0.00$), as well as GPA and vigorous-intensity PA METs ($r=0.783$; $p=0.00$). However, there was no significant correlation between GPA and walking or moderate intensity PA METs. These correlations were present before controlling for study time.

CONCLUSIONS: We showed that typical weekly total and vigorous-intensity physical activity levels were positively associated with GPA among full-time female college students. In addition to the positive health benefits, these results suggest that vigorous intensity physical activity may be an important component in higher academic achievement among female college students. The underpinnings of this relationship should be further examined in future studies.

1710 Board #55 May 28, 3:30 PM - 5:00 PM

Development Of The Perceptual And Motor Abilities (pama) Test For Preschool Children

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PURPOSE: Perceptual motor skills of preschool children are an essential aspect of human development and growth because these skills work in complement with cognitive and sensory-motor development. The purpose of this study was to develop the perceptual and motor abilities (PAMA) test for preschool children. The test of PAMA contains four domains of perceptual-motor skill as like body awareness, spatial awareness, directional awareness and temporal awareness.

METHODS: Preliminary 53 test items on the perceptual and motor abilities for preschool children were extracted from literatures review and experts. A total of 343 preschool aged children, without reported any health problem (ranged 2-4 years-old; $n=70$ from 2yr; $n=147$ from 3yr; $n=126$ from 4yr) were selected under their parents agreement in Korea. Goodness of fitness indexes (infit and outfit) and item difficulties were calculated by Facets software v3.67.1 (Linacre, 2010) for IRT Rasch model. And many-facets Rasch analysis was applied for different of children's age parameter.

RESULTS: The sub domains of PAMA test were accepted unidimensionality assumption for Rasch model by a principal component analysis. Final 25 items of the preliminary 53 items were selected based on infit and outfit statistics, differential item function indexes by gender and disabilities, and including decision making with experts opinion. Item difficulties (logit score) of the PAMA test appear that was -2.91 to +2.68 (9 items) on body awareness, -2.72 to +1.46 (6 items) on spatial awareness, -2.66 to +2.19 (5 items) on directional awareness and -1.82 to +2.13 (4 items) on temporal awareness. The perceptual and motor abilities in accordance with age in preschool children were increased from 2 years to 4 years-old (2yr mean=13.01, $sd=4.66$; 3yr mean=17.17, $sd=4.22$; 4yr mean=21.56, $sd=3.87$). There was statistical significant difference ($\chi^2 = 942.3$) at $p=.001$ by age of preschool children.