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Older Adults Do Not Participate In Light Intensity Physical Activity To Intentionally Enhance Health

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PURPOSE: To describe the feasibility, enjoyment, and self-efficacy of older adults completing light intensity physical activities (LPA) and examine whether participant characteristics predict older adults' beliefs about LPA.

METHODS: Older adults (60+ years) completed questionnaires regarding their perception of LPA and self-reported demographics, health history. Usual physical activity was measured with an accelerometer. Descriptive statistics and frequencies were used to describe results of the surveys. Separate linear regression models were used to examine whether the feasibility, enjoyment, and self-efficacy of light intensity physical activity differed by participant demographics.

SUMMARY OF RESULTS: Participants (N=45) were 70.9±4.8 years old, overweight (27.1±3.7 kg/m²), 68.9% women, and largely white (97.8%). Results indicate older adults did not participate in LPA to intentionally accumulate physical activity or enhance their health. However, they believed they could easily incorporate LPA into their daily life and over half reported they were 'maybe' open to LPA as an acceptable way to increase physical activity. Self-efficacy scores revealed participants were confident they could complete LPA when faced with challenging situations, such as in when it's raining or snowing or when stressed, with all average ratings above average (>3). Body mass index (B=0.08, 95% CI: 0.002, 0.15), age (B=0.05, 95% CI: 0.0004, 0.11), and total time spent in LPA (B=0.003, 95% CI: 0.0002, 0.005) were significant predictors of participants beliefs towards LPA participation.

CONCLUSION: Our results suggest LPA may provide a promising solution to negate many of the often-cited barriers that are associated with physical activity participation. Future research should invest in promoting LPA to older adults as a health-enhancing physical activity.

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The Relationship Between Physical Activity, Weight Status Stress, And Depression In HBCU Students

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Black college students report higher levels of stress and depression than students of other races. This disparity can be due to several factors including systematic racism, imposter syndrome, financial stress, or disproportionate effects of cardiovascular-related disease. Poor mental health can increase the risk of negative health outcomes like obesity and high blood pressure. Physical activity (PA) can reduce negative affect and improve mental health. Only 9 historically black colleges or universities (HBCU) have been included in the American College of Health Association's bi-yearly health behavior survey from 2015-2020, and no more than 10% of any sample were Black.

PURPOSE: Therefore, this study examined the relationships between PA, weight status, stress, and depression in HBCU students.

METHODS: Participants (N=110) completed a Polar TriFit assessment at the university's wellness center. Body mass index (BMI) was calculated from height and weight obtained in the assessment, and participants self-reported PA. Participants completed inventories to assess stress and depression symptoms.

RESULTS: Participants (mean age 20.9±3.9 yrs) were mostly women (66%) and predominantly Black (77.5%). Average BMI was 26.9±6.6 kg·m⁻², and 47.8 % were classified as overweight or obese. Most participants reported regular PA (26.2%) or regular heavy PA (35.5%), and 38.3% reported no regular PA. There was a small, significant correlation between BMI and depression scores (r=.23, p=.02), and there were no group differences for BMI classification (p=.09). BMI was not associated with stress. Those reporting regular heavy PA had the lowest depression scores. Depression scores were lower for regular heavy PA (p=.006) and for regular PA (p=.039) compared to no PA. Regular heavy PA (p=.03) and regular PA (p=.039) participants had significantly lower stress scores than those reporting no PA.

CONCLUSION: Physical activity was associated with lower depression and stress scores regardless of intensity. Therefore, it is important to promote PA to improve mental health in Black college students through intervention. PA will not eliminate chronic stress, but it might help students cope with stress and improve mental health. Research should continue to assess PA and mental health in students enrolled at HBCUs.

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Perceived Barriers Are Associated With Change In Physical Activity In A Behavioral Weight Loss Intervention

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PURPOSE: Behavioral weight loss interventions frequently prescribe physical activity to increase caloric expenditure and improve health, but evidence suggests that perceived barriers to physical activity may change differentially by the dose of activity prescribed. However, it is unclear whether change in perceived barriers to activity is associated with change in physical activity behavior across the intervention. This investigation examined the association between perceived barriers to physical activity and physical activity behavior over a 12-month behavioral weight loss intervention.

METHODS: Adults with overweight or obesity (N=383; age=46.2±7.7 years; BMI=32.1±3.8 kg/m²) were randomly assigned to one of three 12-month treatment groups and each received identical dietary and behavioral interventions: Diet alone (n=127, no prescribed physical activity); Diet plus moderate dose physical activity (n=127, 150 min/week prescribed physical activity); Diet plus high dose physical activity (n=129, 250 min/week prescribed physical activity). Perceived barriers to physical activity were assessed at 0, 6, and 12 months on a 5-point Likert scale (1=strongly disagree; 5=strongly agree) and minutes per week of physical activity was assessed using the Paffenbarger Physical Activity Questionnaire. The association between change in perceived barriers and change in physical activity behavior was assessed using linear regression, adjusted for sex, race, ethnicity, and treatment condition.

RESULTS: Change in perceived barriers from baseline to 6 months was associated with change in physical activity at 6 months ($\alpha\beta=-34.9$, $p<0.01$) and 12 months ($\alpha\beta=-26.1$, $p=0.050$). The association between change in perceived barriers from baseline to 12 months and change in physical activity at 12 months was $\alpha\beta=-24.3$ ($p=0.051$).

CONCLUSION: As perceived barriers to physical activity decreased over the course of a behavioral weight loss intervention, the participation in physical activity increased. Findings support the importance of interventionists targeting perceived barriers as a means to improve engagement in physical activity within behavioral weight loss programs, as these perceptions can change over time and may impact adoption of physical activity.

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The Influence Of Body Composition On Health Monitoring Behavior

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Maintenance of an optimal body composition is an important component of physical functioning and longevity. Comprehensive anthropometric analyses provide patients and clients with objective assessments of their current fitness. It is important to understand the potential consequences of this information on an individual's motivation to continue health monitoring.

PURPOSE: To explore which factors of body composition analysis influence future testing behavior.

METHODS: We tested 209 men and 219 women from two exercise facilities (a commercial gym and a CrossFit facility) using the InBody 770 bioelectrical impedance analyzer. We documented age, height, weight, BMI, lean body mass, skeletal muscle mass, lean leg mass, arm circumference, body fat mass, trunk fat mass, and body fat percentage. All subjects were eligible for repeated testing on a voluntary basis. We used negative binomial regression to evaluate the effect of anthropometric variables on the number of repeat tests.

RESULTS: Subjects were 35.5±10.3 years old, weighed 187.5±50.2lb, had a BMI of 29.7±6.5kg/m², 130.0±31.1lb lean body mass, 73.4±18.7lb skeletal muscle mass, 37.6±9.0lb lean leg mass, 14.4±3.8in arm circumference, 57.6±33.6lb body fat mass, 29.8±14.0lb trunk fat mass, and 29.6±11.0% body fat. Subjects were screened 2.9±3.6 times (range: 1 to 33). Holding constant sex (p=0.004) and duration following the initial test date (p=0.003), the only anthropometric factor that emerged as a significant predictor of serial testing was skeletal muscle mass (p=0.001).

Each additional pound corresponded to a 1.7% increase in the number of follow-up tests (95% CI of IRR: 1.007 to 1.027). In this model, females were screened 69.3% more times (95% CI of IRR: 1.181 to 2.426). Higher bodyweight ($p=0.089$), body fat mass ($p=0.105$) and body fat percentage ($p=0.139$) exhibited non-significant patterns of reduction in the number of subsequent tests; they were not included in the model. No other predictor was related to testing behavior ($p>0.250$).

CONCLUSIONS: Understanding which components of body composition analysis affect motivation to continue testing provides health practitioners insight into which populations may benefit from additional encouragement. Our results indicate males with lower muscle mass are more susceptible to attrition.

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The Relationship Between Physical Activity Level And Mental Health Among Middle School Children

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PURPOSE: To assess the relationship between physical activity level and suicidality and to identify disparities among different race/ethnicities and genders in middle school children in Howard County, Maryland.

METHOD: This cross-sectional study analyzed data from the 2018 Youth Risk Behavior Survey conducted by the Centers for Disease Control and Prevention and published by Maryland Department of Health. The study population included 1,584 students ages 11-14 from Howard County public middle schools. Rates of participation in physical activity for at least 60 minutes per day and mental health outcome represented by suicidality were determined. Two-sample t-tests were conducted to compare physical activity and suicidality among different sex and ethnic groups. The correlation between physical activity and suicidality was assessed.

RESULTS: Overall, 30% of students were physically active for at least 60 minutes 7 days/week; males (37%) were more active ($p<.001$) than females (24%). White students reported more days of physical activity (mean: 5 days SD= 2.0) compared to African American (mean 3 days SD= 2.4, $p<.005$) and Hispanic/Latinos (mean 4 days SD= 2.9, $p<.001$). The overall suicidality rate was 23%, with more females (28%) reporting suicidal thoughts than males (18%, $p<.05$). No significant difference was found between suicidality among White students compared to African American students ($p= .29$) and White students compared to Hispanic/Latino students ($p= .53$). Overall, suicidality was independent from ethnicity and levels of physical activity were negatively correlated with suicidality (Spearman's rho= -0.8, $p= .01$).

CONCLUSION: As noted in previous studies with older populations, physical activity was associated with decreased concurrent depressive symptoms among middle school children. We identified a negative correlation between physical activity and suicidality as well as racial disparity in physical activity. Minority groups (African American and Hispanic/Latino) students were less likely to be active. There was no significant disparity in suicidality among the different ethnic groups. These findings highlight the need to address targeted physical activity programs to decrease ethnic disparity and improve mental health among middle school children.

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Automatic Evaluation Of Exercise, Non-leisure Time Physical Activity And Sedentary Behavior

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Dual process theories related to physical activity (PA) behavior have shown that PA is, at least in part, regulated by automatic processes. The two information processing systems -reflective and automatic (or impulsive) - may jointly activate behavioral schemata and facilitate behavior output, or they may compete with one another if they activate opposing schema. However, relatively little is known about the interaction between the reflective and automatic systems in relation to PA behavior.

PURPOSE: To examine the relationships among automatic and reflective processes (i.e., PA intentions), four different PA domains (i.e., exercise [EX], light [LPA] and moderate-to-vigorous intensity non-leisure time PA [MVPA], and sedentary behavior [SB]), and habitual PA levels (MET-minutes/wk).

METHODS: Twenty participants (≥ 18 years old) completed the Single Category Implicit Association Task as a measure of the automatic evaluation (AE) of PA and sedentary behaviors, a self-report measure of PA intention, and the International Physical Activity Questionnaire (long version).

RESULTS: The AE of the different PA domains were not different ($M\pm SD$): EX=-0.14 \pm 1.2, LPA=0.2 \pm 1.5, MVPA=-0.41 \pm 1.2, SB=-0.6 \pm 1.5 ($P=0.53$). Time spent (MET-minutes/wk) in MVPA ($r=0.57$, $p=0.008$,) and total PA ($r=0.58$, $p=0.007$) were positively correlated with the AE of LPA. Time spent in vigorous intensity PA (MET-minutes/wk) was positively correlated with PA intention ($r=0.46$, $p=0.04$).

CONCLUSIONS: Our results indicate that the influence of both reflective and automatic processes may depend, in part, on the particular PA domain being assessed. Future analyses with an expanded sample will allow for the identification of those covariates which influence the relationships among automatic and reflective processes and components of the PA domain.

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Associations Between Social And Park Environments And Moderate-to-vigorous Physical Activity In Parks Among Adolescents

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Health benefits of regular physical activity (PA) for adolescents, defined as 60 min or more of daily moderate-to-vigorous PA (MVPA), are well established. Yet, the majority of adolescents do not engage in sufficient PA to reap these benefits. Urban parks are key environmental resources for promoting PA in adolescents. Although previous studies have revealed that providing urban parks in neighborhoods has a potential for promoting regular PA in adolescents, current evidence is still mixed for the associations between park environmental characteristics and park-based PA in adolescents.

PURPOSE: To examine the associations between social and park environments and MVPA in parks among adolescents in Hong Kong.

METHODS: A cross-sectional study involving direct observations of adolescents was conducted in 32 randomly selected urban parks in Hong Kong. Park environmental characteristics were objectively measured using the Community Park Audit Tool. Social factors (levels of formality and active supervision) and MVPA in parks were measured using the System for Observation Play and Recreation in Communities. Gender, time periods, week types, neighborhood walkability, neighborhood income, and temperature were measured as covariates. Linear mixed-effects models were used to examine the associations between social and park environments and MVPA in parks among adolescents.

RESULTS: A number of 2,397 adolescents were observed using urban parks for MVPA, of which 396 (16.5%) were girls and 2001 (83.5%) were boys. After controlling for the covariates, MVPA in parks among adolescents had a positive association with amenity quality ($\beta = 1.91$) and park safety ($\beta = 4.15$), while the associations was negative with park aesthetics ($\beta = -1.94$). Diversity of facilities or greenness was not associated with MVPA in parks among adolescents. We also found that the more informal ($\beta = 9.46$) and organized ($\beta = 42.72$) the activities, the more likely adolescents were to engage in MVPA in parks. Compared with no supervision, presence of a teacher ($\beta = 7.28$) was associated with a higher likelihood of MVPA in parks, while presence of a parent ($\beta = -12.18$) was associated with a lower likelihood of MVPA in parks.

CONCLUSION: These social and park environmental factors should be considered in order to attract adolescents to using parks for MVPA.

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Precompetitive Stress In Rhythmic Gymnasts Assessed By Using Salivary Alpha-amylase, Protein And Potassium

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Stress and adaptation are primary components of training and competitions in rhythmic gymnastics. This sport requires gymnasts to demonstrate maximum physical effort under great psychological pressure. Non-invasive biomarkers, such as salivary alpha-amylase (sAA), function as useful indicators of stress in acute and chronic stress studies.