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The Latest Science on Physical Activity

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The Latest Science on Physical Activity

Brittany R. Allman, Ph.D.
Postdoctoral Fellow

October 23, 2020

Definitions

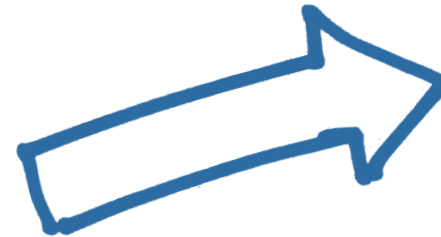
Physical Activity



“movement”

Any bodily movement produced by the contraction of skeletal muscles that results in a substantial increase in caloric requirements over resting energy expenditure.

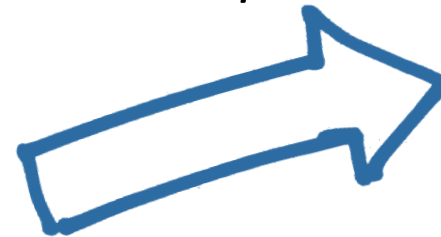
Exercise



“structured activity”

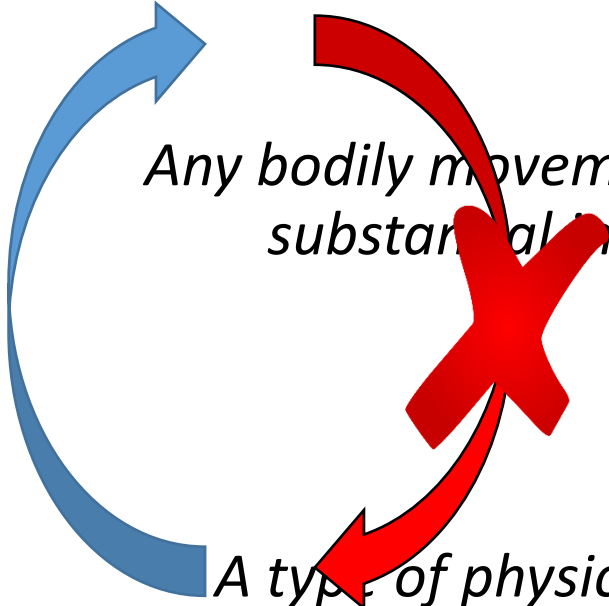
A type of physical activity consisting of planned, structured, and repetitive bodily movement done to improve and/or maintain one or more components of physical fitness.

Physical Fitness



“how fit you are”

The ability to carry out daily tasks with vigor and alertness, without undue fatigue, and with ample energy to enjoy leisure-time pursuits and meet unforeseen emergencies.



Current Recommendations



AMERICAN COLLEGE
of SPORTS MEDICINE
LEADING THE WAY

- Healthy adults aged 18–65 years should participate in:

- **Cardiovascular exercise training**

- 150 minutes of moderate intensity aerobic physical activity - a minimum of 30 min on five days per week, or
- 60 minutes of vigorous intensity aerobic activity - a minimum of 20 min on three days per week



150 minutes
of moderate-intensity aerobic activity every week

- **Resistance exercise training**

- Two or more days per week - perform activities that maintain or increase muscular strength and endurance

2X per week
Muscle-strengthening activities on 2 or more days a week that work all major muscle groups



Moderate versus Vigorous

Moderate

- Challenging, yet doable
- Should be able to say a full sentence, and then have to grab a gulp of air
- Race pace



Vigorous

- Challenging and uncomfortable to extremely challenging
- Only able to get a few words out without having to take a breath
- Really breathy



Potential Workout Schedule

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Rest	50 min cardio	45 min weight training	50 min cardio	45 min weight training	50 min cardio	Rest

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Rest	30 min cardio	30 min cardio + 30 min weight training	30 min cardio	30 min cardio + 30 min weight training	30 min cardio	Rest

Cardiovascular Exercise Training Examples

- Walking
- Jogging
- Running
- Elliptical
- Cycling
- Rowing
- Dancing
- Hiking
- Kickboxing
- Jump ropes
- Athletic conditioning
- Stair climbing
- Swimming
- Circuit training



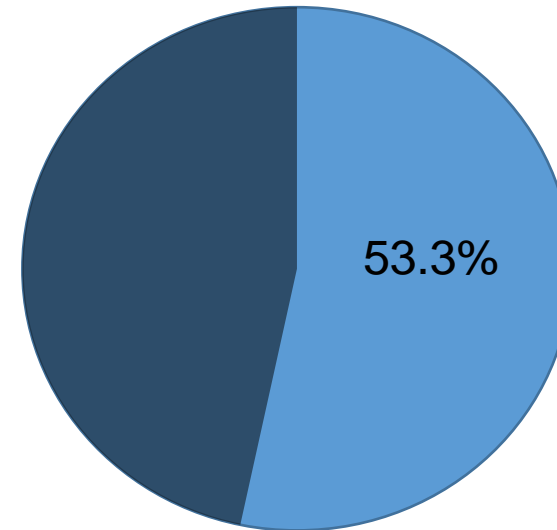
Resistance Exercise Training Examples

- Free weights
- Medicines balls
- Sand bags
- Body weight
- Weight machines
- Resistance bands
- Suspension equipment

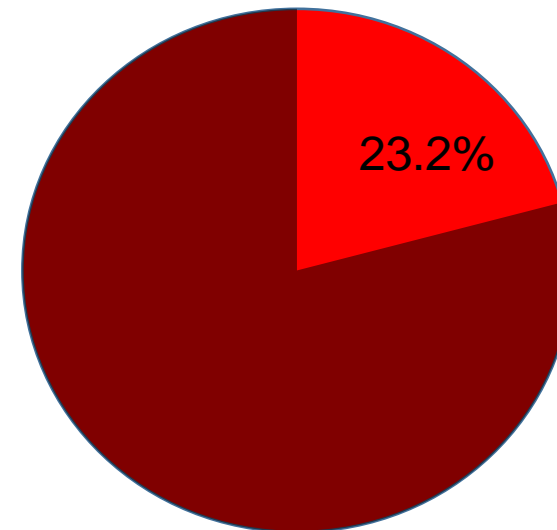


What Percentage of Americans Over 18 Years Old Meet the Guidelines?

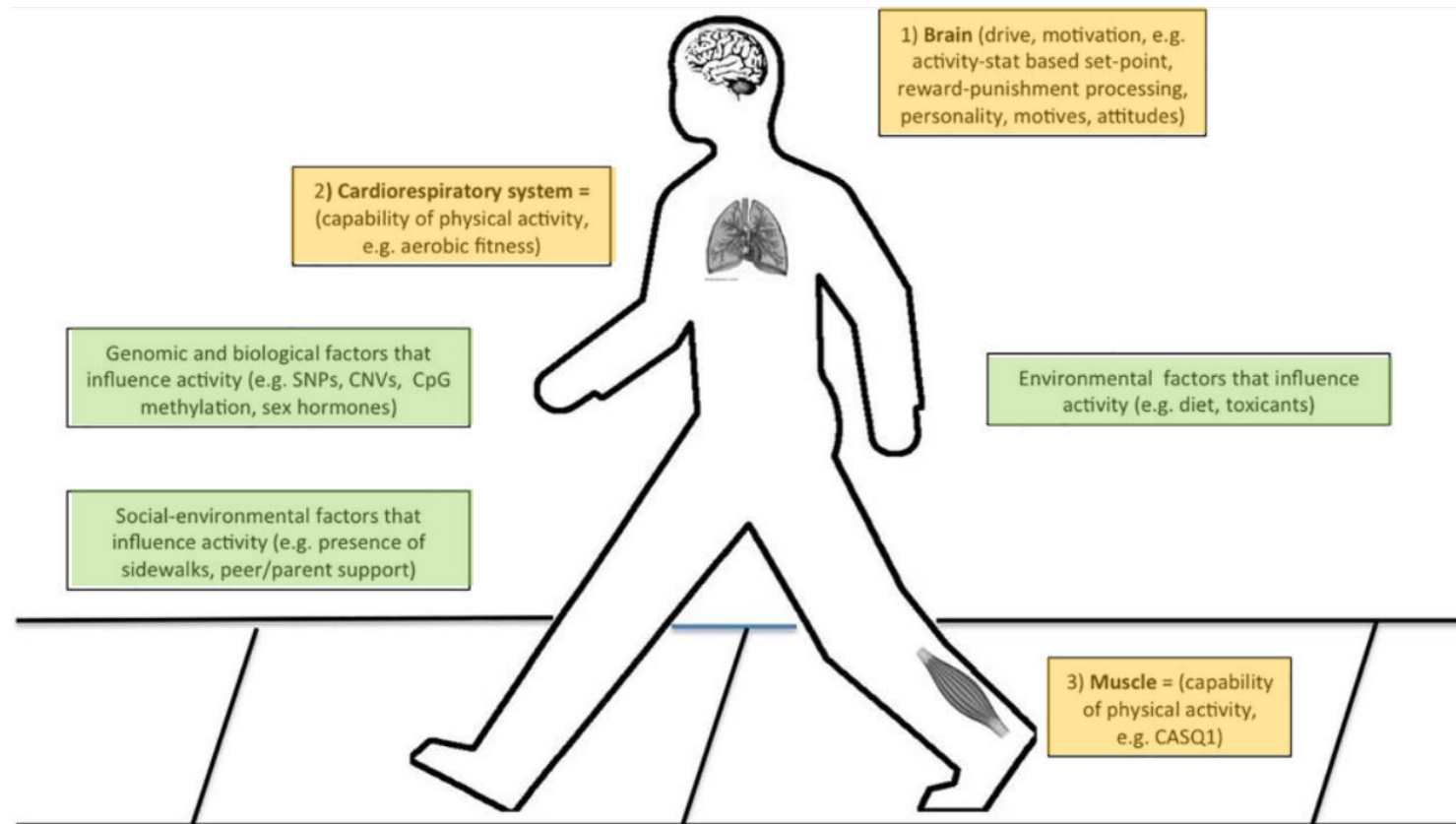
Aerobic physical activity



Both aerobic and muscle-strengthening activity



Physiological Systems Involved in the Regulation of Physical Activity *and* Factors that Influence Activity



Physical Activity in Research

- Physical activity versus diet
- Physical activity and biological determinants
- Mental health and well-being

Physical Activity versus Diet

Are abs really made in the kitchen?



What do you think? Type “Yes!” or “No!”

Physical Activity versus Diet

- **In children:** Physical activity and TV viewing are significant predictors of body mass index (BMI) among 3–4-y-old children followed for 3 y
 - Not diet!
- **In adults:** protocols utilizing exercise were more effective than those that employed just a hypocaloric diet
 - Meta-analysis of 66-population based studies, and 162-studywise groups
 - The combination of diet with exercise (especially resistance training) being more effective than diet or diet with endurance training in reduction of body mass and fat mass while retaining of FFM following treatment

Do Biological Determinants Play a Role?



Biological Determinants

- Characteristics of a person that have biological background
 - Genetics
 - Family predisposition
 - Pathology – causes and effects of disease
 - Health status
 - Anthropometry
 - Body mass index (BMI)
 - Adiposity
 - Birth weight
 - Physical fitness levels
 - Age
 - Sex
 - Ethnicity
- Some are modifiable, some are non-modifiable

Physical Activity and Biological Determinants

- Biological determinants regulate physical activity by influencing:
 - Brain “wiring” involved in personality
 - Affect regulation
 - Reward processing
 - Cardiorespiratory and muscle capacity

Thus, they influence **self-efficacy**



Physical Activity within the Family Unit

Have you ever worked out with your family or a member of your family?

Type "YES" in the chat if you have!

Physical Activity within the Family Unit

- Students involved in sports have:
 - Higher levels of exercise
 - Higher milk consumption
 - Healthier self-image
 - Lower levels of emotional distress
 - Lower levels of suicidal behavior
- Family sports or physical activity:
 - Enriches family life
 - Allows the family to develop together
 - Parents can determine the emotional nature and personality of each of their children
 - Parents are better able to guide each child effectively in other areas of life.
 - Sets children up for school and club sports
 - Increases the cultural awareness of children
 - Improves the relationship between the father/mother and child
- Participation of older siblings in athletics directly affects the participation of the younger sibling in athletics



Harrison PA et al., Journal of School Health, 2009

Proceedings of the 2019 3rd International Conference on Economic Development and Education Management (ICEDEM 2019)

Knoester C and Randolph T, Human Kinetics Journal, 2018

Osai KV and Whiteman SW, Journal of Amateur Sport, 2017

Physical Activity within the Family Unit: Disparities

- There are disparities in availability of sports to the family unit
 - Socioeconomic status
 - Gender of the child
 - Family structure
 - Family environment
 - School environment
- Implementation science is developing strategies to make sports more available to the family unit



Physical Activity and Mental Health

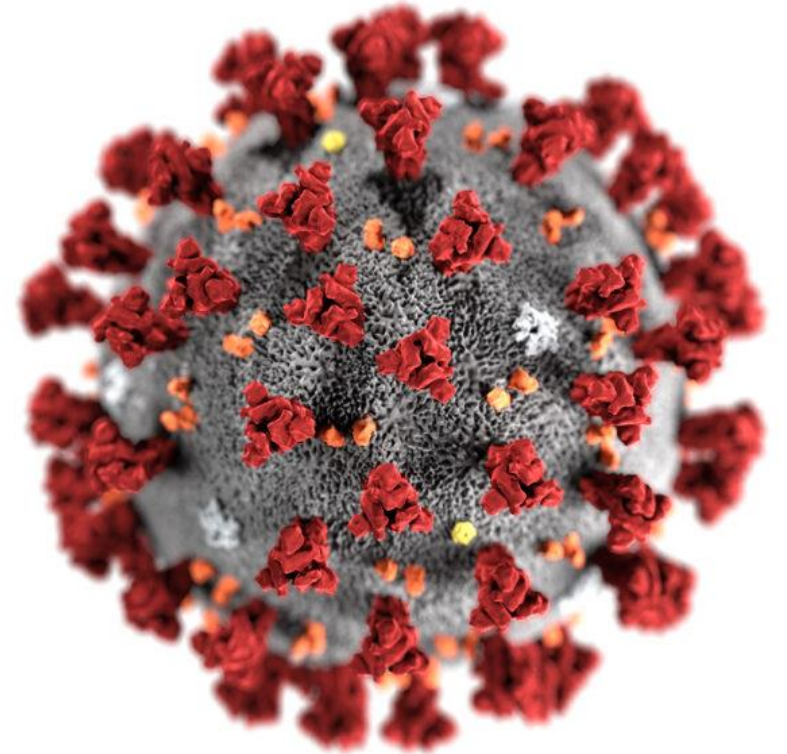
- In children and adolescents, lower levels of psychological ill-being:
 - Depression
 - Stress
 - Negative affect
 - Total psychological distress
- Also in children and adolescents, greater psychological well-being:
 - Self-image
 - Satisfaction with life and happiness
 - Psychological well-being
- Negatively related to anxiety and depression in college students



Rodriguez Ayllon M et al., Sports Medicine, 2019
Ghrouz AK et al., Psychiatrics, 2019

Physical Activity and Mental Health: COVID

- Online survey in the UK, Ireland, New Zealand and Australia within the first 2-6 weeks of government mandated COVID-19 restrictions
- Participants who reported a drop in exercise behavior demonstrated poorer mental health and well-being
- Women reported more positive changes in exercise behavior
- Young people (18-29y) reported more negative changes
- Individuals who engaged in more physical activity reported better mental health and well-being



COVID Continued...

- This is also true during pregnancy!
- Increase in depression and anxiety with COVID
- Physical activity may be associated with better mental health (depression) for this population



What to do from here...

- What are you currently doing for physical activity?
- What do you have past experience with?
- Do you have any orthopedic issues or limitations?
- What facilities or programs do you have access to?
- What are your barriers that prevent you from being active?
- What are facilitators that help you in being active?

Barriers versus Facilitators

Barriers

- Impede implementation of, or adherence to physical activity
- Examples:
 - Time
 - Energy
 - Finances
 - Lack of experience
 - Not confident
 - No support

Facilitators

- Promote the implementation of, or adherence to the physical activity
- Examples:
 - Feels good after
 - Helps me lose weight
 - Improved mental health
 - Feel more confident
 - Improved relationships

What are some facilitators that you currently experience (or have experienced) that help you stay active? Type in the chat!

This Week...

Look up ways to address each of your barriers so that you can lead a healthier lifestyle!

< October



S	M	T	W	T	F	S
18	19	20	21	22	23	24

Tuesday October 20, 2020

5 AM

Teach at OTF Midtown

Orangetheory Fitness
6813 Cantrell Rd, Little Rock, AR 72207, United States

6 AM

Teach at OTF Midtown

Orangetheory Fitness
6813 Cantrell Rd, Little Rock, AR 72207, United States

7 AM

8 AM

Workout with Ryan

Suggested Location: W Markham St

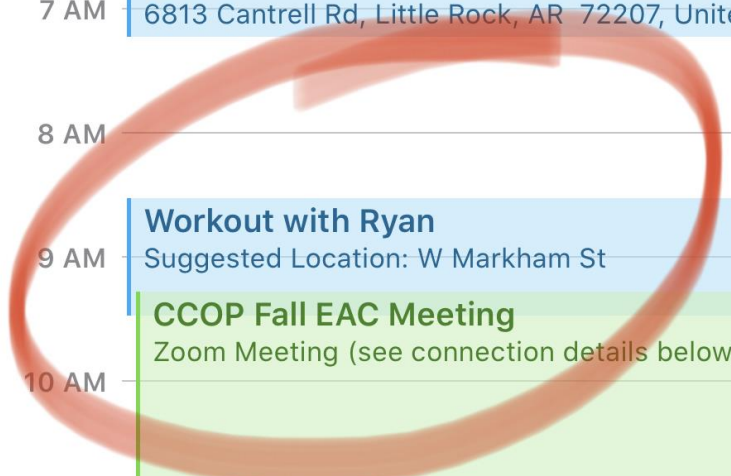
9 AM

CCOP Fall EAC Meeting

Zoom Meeting (see connection details below)

10 AM

11 AM



Questions?



Dr. Brittany R. Allman



drbrittallman