GETTING STUDENTS MOVING

every **body's** role in learning

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Greensboro, NC

Well…for starters…just dance

https://www.youtube.com/watch?v=VgQoBcljsjw

Objectives

- Understand the role of movement in learning
- Experience movements that help the brain and body work together
- Acquire resources & ENTHUSIASM for implementing movement in classrooms

http://www.arkansascsh.org/index.php

NC School Health Advisory Councils

- Ensure professionals who directly influence student health meet regularly to:
  - Learn what colleagues are doing
  - Problem solve
  - Plan synergistic activities
  - Participate in curriculum selection and adaption
- Facilitate innovation in health education
- Ensure that students receive nutrition education and engage in healthy levels of vigorous physical activity

http://www.nchealthyschools.org/docs/schoolhealthadvisorycouncil/advisorycouncilsmanual.pdf

NC Physical Activity Standards

- K-8
  - minimum of 30 minutes of moderate to vigorous physical activity daily
    - Recess
    - Regular and additional PE
    - Dance
    - Classroom energizers
    - Other curriculum based physical education activity programs
- For a duration to provide significant health benefits

http://www.nchealthyschools.org/components/healthyactivechildrenpolicy

Movement and Student Life

- Availability for instruction
  - Health
  - Alertness
  - Strength & Endurance
- Ability to "show what you now"
- Learning efficiency and learning styles
- Play and leisure

Availability for Instruction

- Cultural changes
- Health
  - Overweight and obesity
  - Co-morbidities:
    - Heart disease
    - Stroke
    - Diabetes
    - Some cancers
    - Low self-esteem; depression
  - Absenteeism

"Because of the increasing rates of obesity, unhealthy eating habits and physical inactivity, we may see the first generation that will be less healthy and have a shorter life expectancy than their parents."

Surgeon General Richard Carmona

http://www.eatsmartmovemorenc.com/programs_tools/school/docs/pa_standards/MMPAStandards.pdf

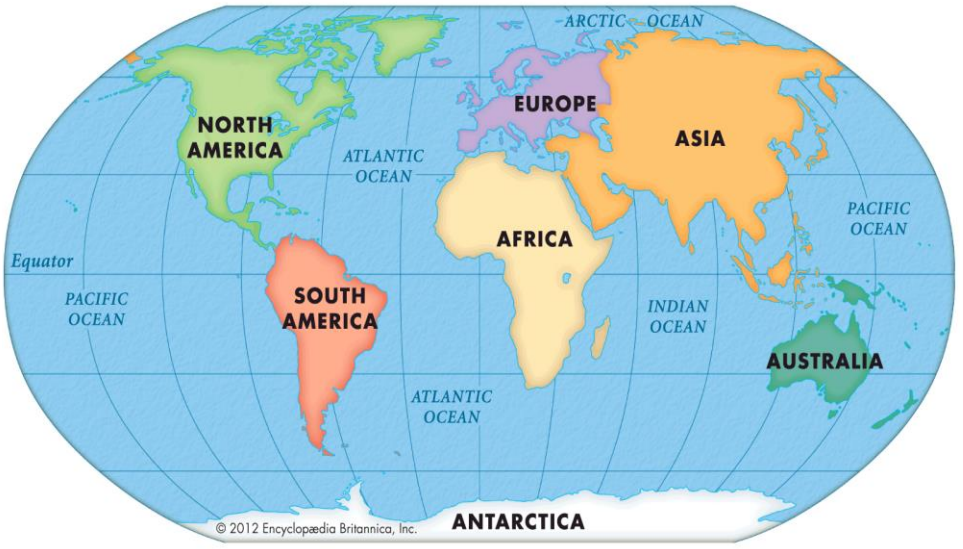
Availability for Instruction

- Alertness
  - "Just Right" activity and arousal levels
  - Attention span
- Strength and Endurance
  - For sitting
  - For classroom tool use
  - For daily transitions
  - For campus navigation

Knowledge Expression

- Not just about instructional access
- Enhanced opportunities for knowledge demonstration
- Increased demand for enacted mastery in CCSS

TIME TO MOVE



Play

In an effort to resurrect free play, we should enthusiastically promote it on its traditional merits—that **play allows children to experience the joys of movement, creativity, and friendship.**

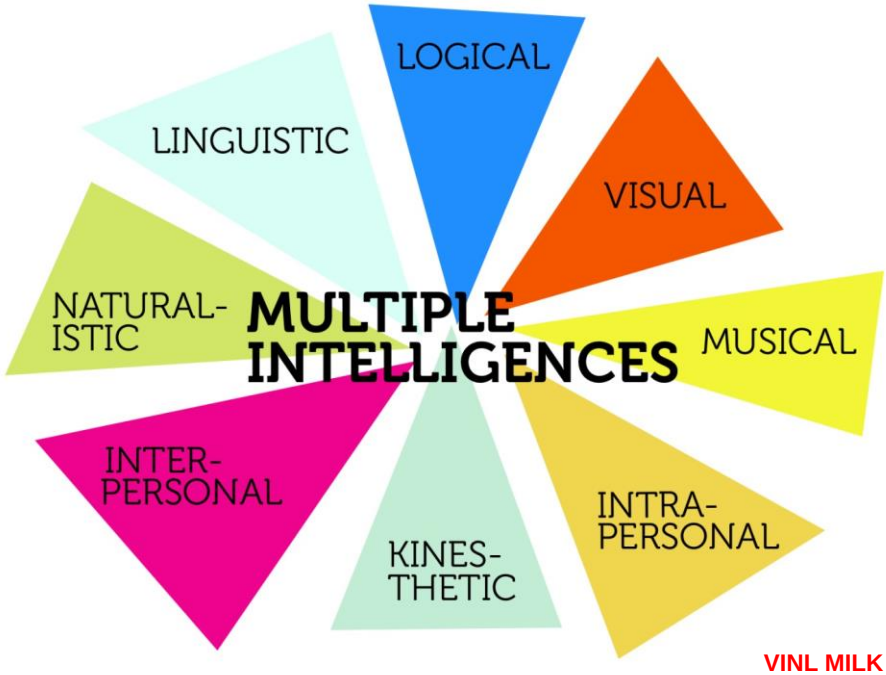
Though it seems urgent to emphasize that play improves energy balance, we may get further in obesity prevention by realizing that modern neurobiology supports grandmother's conventional wisdom and that the brain will naturally reinforce behaviors that make it healthy. Hillary L. Burdette, MD, MS; Robert C. Whitaker, MD, MPH *Arch Pediatr Adolesc Med.* 2005;159:46-50.

Learning Efficiency

Evidence is mounting that each person's capacity to master new and remember old information is improved by biologic changes in the brain ***brought on by physical activity****. Our physical movements call upon some of the same neurons used for reading, writing and math…*

What makes us move is also what makes us think.

Dr. John Ratey, Harvard psychiatrist and author of A User's Guide to the Brain



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Differentiated Instruction

- 8 kinds of learners—does that mean 8 different lesson plans ?!?!?!?
- Not more lessons → Smarter, more efficient lessons
- Build multiple streams for learning, remembering, performing, and understanding into same plan
- Can occur with instructional:
  - Content (WHAT WE TEACH)
  - Process (HOW WE TEACH)
  - Product (HOW WE MEASURE LEARNING)

Assumptions

- We are all natural learners
- Every learning situation deals with the basic sequence of: input→integration→assimilation→action
- Certain movements may "warm-up" or fuel brain for this sequence by increasing nerve growth and connection
- Movement:
  - strengthens learning
  - improves memory and retrieval
  - enhances learner motivation and morale
- Brain is our thinking "muscle" and benefits from exercise

What is Movement-based Instruction?

Three Categories

1. Preparatory activities
2. Curriculum enhancement with movement
3. Instructional breaks

Preparatory Activities

- Movement to prepare the brain for learning
- Aerobic activity, <5 min
  - Sustained big muscle movements
  - Heart rate between 50-70% of max
- Midline crossing and using both sides of body at same time
- Repetition and routine encouraged!
  - Cup game (GreatGroupGames.com)
  - Partner Fives & Tens
  - Four spine moves sequence

Curriculum Enhancement

- Setting the stage for learning
- Clear explanation of what to do
- Modeling the process (showing)
- Guided practice (include check for understanding and corrective feedback)
- Independent practice (when provider is confident students will be successful)
- Generalization
- Assessment/Closure

Harris, Schumaker & Deschler, 2008

Instructional Breaks

- Average high school student can sustain engagement in instruction for ~15 minutes
- Consider <10 minutes instructional chunks separated by <2 minute breaks
- Movement breaks can be used to:
  - Reinforce what was just taught
  - Rest and refresh learners' minds
- Clapping, chanting, marching, echoing

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TIME TO MOVE

SHOW ME

three categories of movement suitable for the classroom

Brain Change-not JUST for babies

The Good News

Neurogenesis

Our brains grow new neurons.

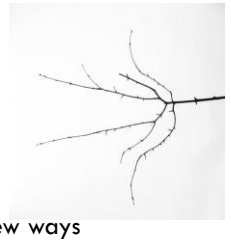
- Primarily in the hippocampus (responsible for encoding long-term memories)
- Highly correlated with mood, memory and learning
- Enhanced by good nutrition, regular exercise and low stress

(Kepperman & Gage, 1999; Kepperman, Wiskott & Gage, 2004)

Neuroplasticity

Neurons in our brains continually:

- Extend
- Branch out
- Prune
- Correct
- Re-organize
- Connect in new ways
- Strengthen



This 're-wiring' occurs according to environmental requirements and at a rapid pace.

(Sousa, 2006; van Duijvenvoorde et al, 2008)

Movement and Neuroplasticity

Movement experience:

- elaborates new axonal projection fields
- establishes novel connections
- prunes dendritic spines, by selectively eliminating unused synaptic inputs

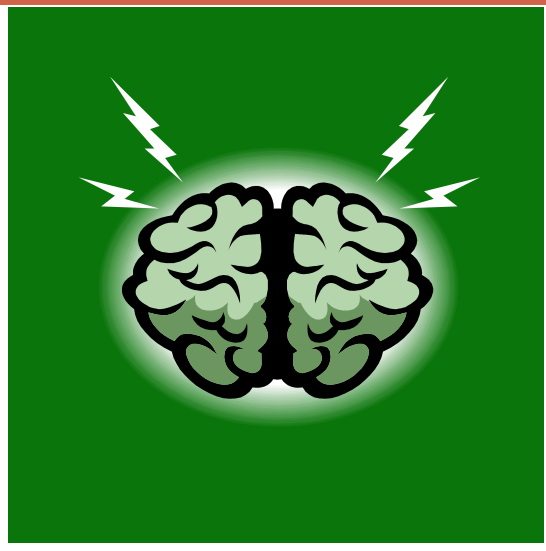
(DeBello et al, 2001; Antonini&Stryker, 1993; Wallhausser-Franke et al, 1995; Scheich, 1987)

John Dewey in 1926

"Why is it, in spite of the fact that teaching by pouring in,

learning by passive absorption, are universally condemned, that they are still so entrenched in practice?"

TIME TO MOVE: Warm-up…



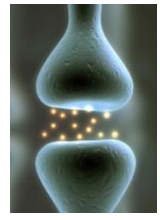
Paradigm Shift (Sousa, 2010)

Prevailing Thought	Evidence-based
Learning happens in the brain	Learning happens via action in/with our world
Brain= source of self	Brain= part of the body
Brain centered approach	Whole student approach
Linear instruction	Dynamic instruction
Consistent support	Scaffolding
Discrete learning (sit and get)	Embodied, contextual learning

Using Brain Chemistry to Enhance Learning

Dopamine

- Neurotransmitter that carries information across synapses/gaps between branches/axons & dendrites
- Levels increased by exercise and movement
- Produces feelings of pleasure
- Associated with memory, focus and motivation
- Levels decrease with negative emotion and awareness of mistake



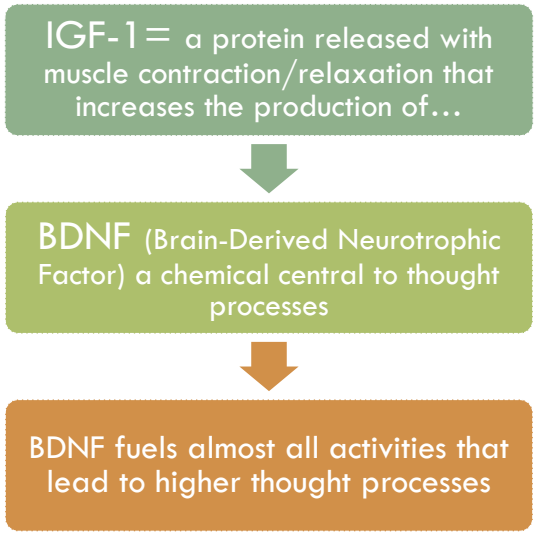
Storm & Tecott, 2005; Salamone & Correa, 2005

Amygdala-friendly, Dopamine-releasing Strategies

- Incorporate movement (e.g. ball toss, charades)
- Student selected activities
- Student led instruction in dyads
- Use of humor (avoid sarcasm)
- Employ frequent, low risk assessment/feedback

Sousa, 2010

Using movement + brain chemistry to advantage learning



Ratey, 2008

Evidence: Exercise + Learning

- 15 min of exercise can elevate the mood of young children (Williamson, 2001)
- Participation in PE immediately prior to reading, improved all student performance, including students with poor verbal skills (Carmichale, 2007)
- Exercise improves learning at three levels:
  - Optimizes mind-set to improve:
    - alertness,
    - attention and
    - motivation
  - Prepares and encourages nerve cells to connect
  - Stimulates new nerve cell development from stem cells in the hippocampus (Ratey, 2008)

Evidence: Physical Activity + Learning

- Increased PA has a significant positive effect on cognition
- Some students participating in an in-class PA program improved on-task behavior by 20%
- PA improves concentration
- When 14-26% of school day is devoted to PA: learning is not impeded and in some instances even accelerated
- PA appears to improve executive function abilities and math abilities in obese children

(Sibley, 2002; Mahar, 2006; Taras 2005; Shepard, 1997; Baker, 2007)

TIME TO MOVE: Idea web

More Good News- Classroom Management Assist

- The majority of these articles (86%) found at least one positive association with academic behavior outcomes
- Given these findings, physical activity interventions may offer one approach to improving academic behaviors (e.g., classroom conduct)

(Mahar, 2006; Jarrett et al, 1998; Pellegrini, 1993; Tuckman & Hinkle, 1986; Bluechardt, Wiener & Shephard, 1995; Dwyer, Blizzard & Dean, 1996; Collingwood et al, 2000)

Active Learning

Active Learning (engaged learning with & through movement):

- increases blood flow to the brain
- affords better access to more long-term memory areas
- helps students make greater connections between new and prior learning
- appeals to all senses
- provides a reason to learn
- promotes attention to task
- may lessen negative behaviors

(Scholey, Moss, Neave & Wesnes, 1999; Choate, 2004)

In-class Movement: Employing Energizers

- After the *Energizers* activities were systematically implemented into the classrooms, on-task behavior systematically improved
  - 8% improvement in on-task behavior between the *pre-Energizers* and the *post-Energizers* observations was statistically significant ($p < .05$)
  - the difference was moderate to large ($ES = 0.60$).
  - the least on-task students improved on-task behavior by 20% after the *Energizers* activity
- Students in this intervention group took significantly ($p < .05$) more in-school steps than the control group
- A classroom-based physical activity program can:
  - increase daily in-school physical activity levels
  - improve on-task behavior during academic instruction

(Mahar, Murphy, Rowe, Golden, Shields & Raedeke, 2006)

Whole Brain or Sensory-based Learning

Our Reticular Activating System (RAS) serves as the initial sensory intake filter.

Research shows that our classrooms must:

- Reduce threats of embarrassment, punishment, anxiety, fear and stress (Shim, 2005)
- Promote attentive focus through novelty (Raz & Buhle, 2006)

This is your brain on movement…

- Cognitive skills and motor skills appear to develop through dynamic interaction.
- Movement can affect the brain's physiology by increasing:
  - Cerebral capillary growth
  - Blood flow
  - Oxygenation
  - Production of neurotrophins
  - Nerve cell growth in the hippocampus (center of learning and memory)
  - Neurotransmitter levels
  - Development of nerve connections
  - Density of neural network
  - Brain tissue volume

Associations with these changes

The previously mentioned physiological changes may be associated with:

- Improved attention
- Improved information processing
- Improved information storage
- Improved information retrieval
- Enhanced coping
- Enhanced positive affect
- Reduced sensations of cravings and pain

TIME TO MOVE

EDIT THESE SENTENCES:

When my mother, claire was child she lived in a smal town

Ouch. i hate it win i smash my thum with a hammers.

can you Please gargle wiht the door clozed

Guiding Principles

- How long? How often?
- What type?
- Create routines for transitioning in and out
- Minimally invasive, low resource-dependence
- Students involved in design/implementation
- Repetition encouraged, looking to establish sustainable routine
- Engaging and honoring all learners

Guiding Principles

- Honor your students, honor yourself
- Know your strategies for attention and alertness
- Help your students discover/shape their strategies for attention and alertness
- Write lesson plans with movement in mind
- Avoid using physical activity as punishment
- Emphasize fun and skill development over competition
- Participate in recess and classroom physical activity

http://www.eatsmartmovemorenc.com/programs_tools/school/docs/pa_standards/MMPAStandards.pdf

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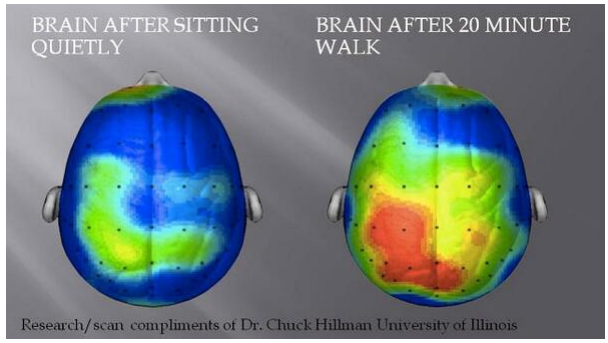
Sustained and Sustainable Movement

- Movement in class schedule
- Transition & mobility routines
- Sharing "work" of the classroom with students
- Educators model movement to build a community of movers



Elements of Quality Movement Programming

- Teachers
  - Planning
  - Communication
  - Professional development
  - Modeling
- Administrators
  - Appraisal
  - Advocacy
- LEA Policy & Supports

http://www.eatsmartmovemorenc.com/programs_tools/school/docs/pa_standards/MMPAStandards.pdf

TIME TO MOVE

http://www.ecu.edu/cs-hhp/exss/upload/energizers_for_grades_k_2.pdf

How Do We Know Movement-based Instruction is Effective?

Measurement options:

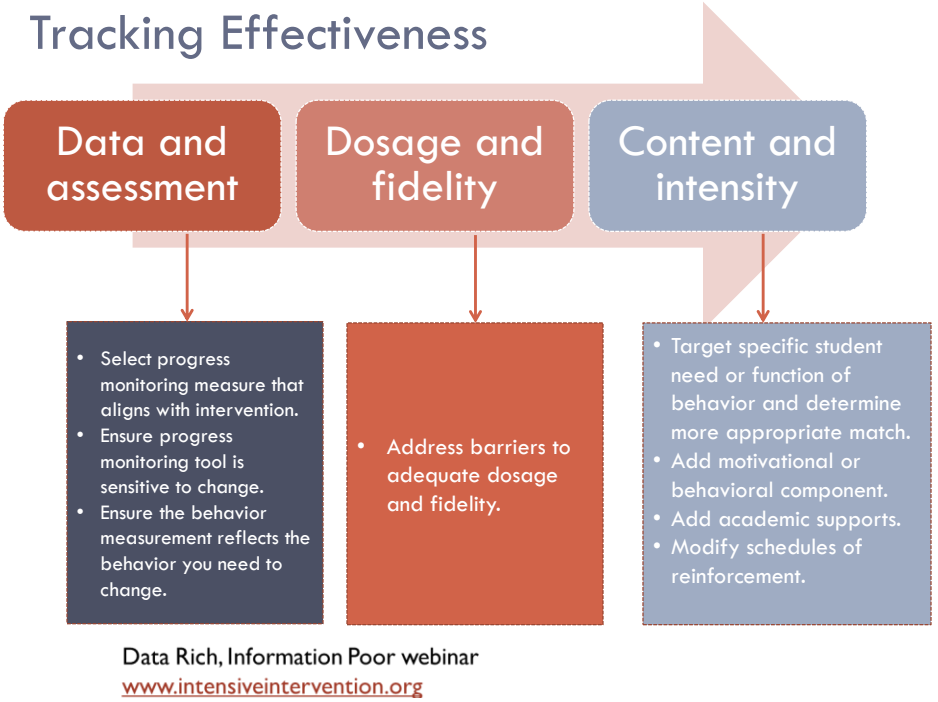
- Academic achievement scores
- Engagement scales/metrics
- Time:
  - Transitions
  - Response to directions
  - Time on tasks
- End-of-day measures
  - Teacher/student energy, mental health, affect level
- Attendance and tardies
- Disruptive behaviors, office referrals

Assessing Engagement

- Active engagement: participating through verbal/alternative communication or physical movement.
- Passive engagement: participating by attending and waiting for his or her turn, giving direct eye contact, passively listening, and/or attending to the teacher or group members.
- Not engaged: either not attending to ongoing activity, not being attended to by staff or students, or not assigned to a task or given materials.
- Student alone: physically alone or is working by him/herself or with an instructional assistant on an activity unrelated to the activity of other students.
- Student with other students: Student is engaged in an activity with at least one other student.

Hunt, unpublished

Tracking Effectiveness



Data Rich, Information Poor webinar
www.intensiveintervention.org

Centers for Disease Control and Prevention Policy and Practice Recommendations

- Schools should offer or increase opportunities for physical activity
- There is evidence that physical activity may help improve academic performance (including grades and standardized test scores)
- Increasing or maintaining time dedicated to physical education does not adversely impact academic performance
- Studies also suggest that physical activity can impact cognitive skills and attitudes, important components of improved academic performance, including enhanced concentration and attention as well as improved classroom behavior.

Taking all of the evidence into account, schools should strive to meet the National Association for Sport and Physical Education's recommendation of daily physical education and offer students a balanced academic program that includes opportunities for a variety of daily physical activities.

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Course Evaluation

Your feedback is important.

Please take a few moments to evaluate this session!

http://www.cvent.com/d/hrq907/3B