

AAHPERD 2011



When Kids Get Moving
Kids Get Thinking

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The Amazing Human Brain



- The organ of the body that accounts for only 2% of the total body weight of a 150 pound human.
- How do we learn?
- How do we focus?
- How do we problem solve?
- How do we explain different attention spans?



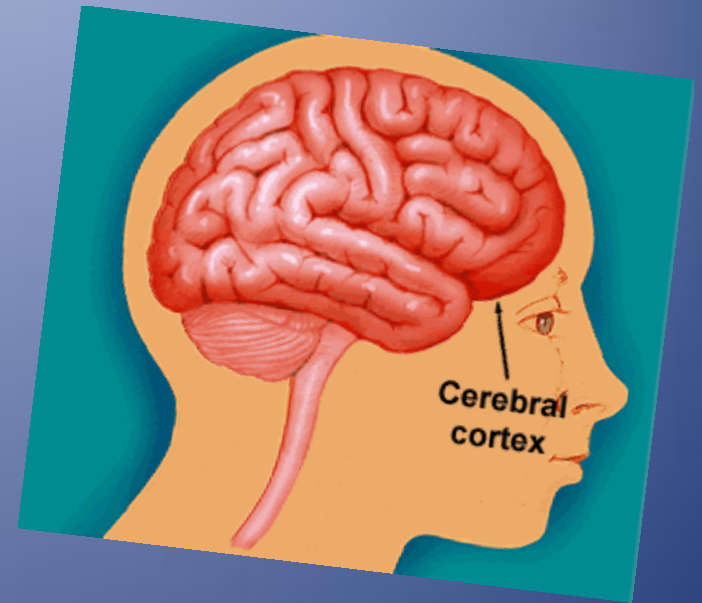
Our Goals for the Day:

- Learn about the brain
- Move to the rhythm and apply rhythmic movement to communication arts
- Challenge your creativity and rhythmic abilities



The Cerebral Cortex

- Largest part of the brain
- Responsible for thinking, decisions, and creativity
- The part of the brain that allows us to think about who we are



http://www.morphonix.com/software/education/science/brain/game/specimens/cerebral_cortex.html

The Lobes of the Cerebral Cortex



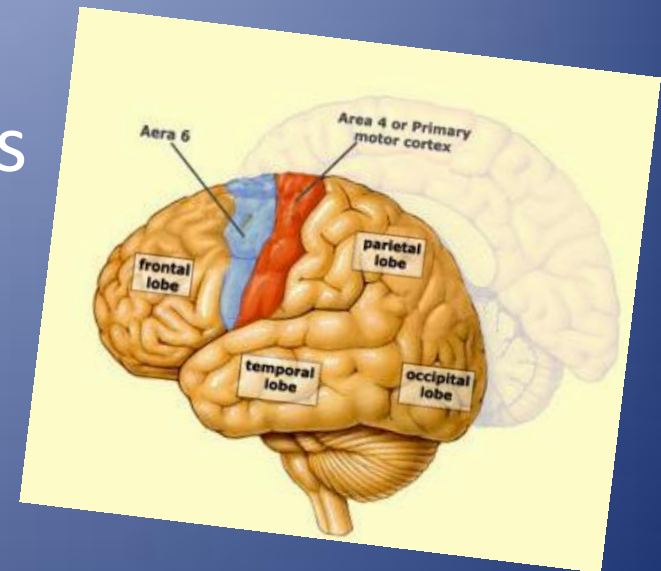
- Frontal - decision-making, problem solving, planning
- Parietal - receives and processes sensory information
- Temporal - emotional responses, memory , speaking
- Occipital - vision and color recognition

<http://biology.about.com/od/humananatomybiology/a/anatomybrain.htm>



The Motor Cortex

- Located in the rear of the frontal lobe
- Controls the body's movements after receiving information from other lobes of the brain



http://thebrain.mcgill.ca/flash/d/d_o6/d_o6_cr/d_o6_cr_mou/d_o6_cr_mou.html



The Motor Map

- The motor cortex located on the L side of the brain controls movement on the R side of the body
- Different size in body parts means more muscles control those areas.

http://www.pbs.org/wgbh/nova/mind/prob_wave.html



The Dancer's Motor Cortex



- Mirror neurons, found in the frontal lobe of the brain
 - Humans are natural born imitators
 - Studies are revealing that the identical sets of neurons can be activated in an individual who is simply witnessing another person performing a movement as the one actually engaged in the action
- Action observation → mirror neurons stimulated → information sent to the motor cortex → imitation can be performed
 - Visual perceptions of movement can stimulate activity in the motor and pre-motor cortices
 - This activity, while not strong enough to create movement, can help train the brain in movement
 - Research shows the brain actually lays down memories of these movements
 - Action that is being watched has to be familiar
 - Your own motor cortex gets more excited when you see people do moves you can do

<http://www.pbs.org/wgbh/nova/teachers/body/mirror-neurons.html>



The Cerebellum

- Receives messages from most of the muscles in your body
- Communicates with the other parts of the brain
- Sends messages about movement and balance back to your body.



THE AIR TRAFFIC CONTROLLER

http://www.morphonix.com/software/education/science/brain/game/specimens/cerebellum_switch.html

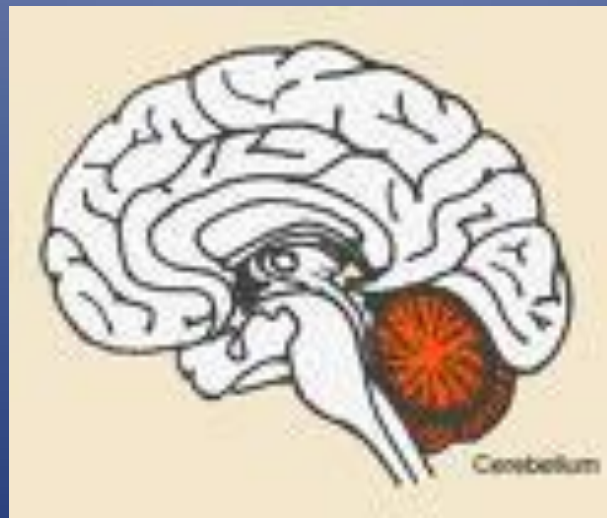


Dance and the Cerebellum



Treasure at the bottom of the brain

- Does Baryshnikov's cerebellum work better than yours?
 - Performance seems to be in the cerebellum
 - The cerebellum is not a multi-tasker
 - It is important to clear your mind when performing new choreography
 - Better cerebellums may translate practice into brilliant movement onstage



Build Better Brains with Movement



- Basic human movements:
 - Rolling
 - Crawling/walking
 - Jumping
- These directly correspond with the path information takes in the brain:
 - Side to side across the corpus callosum
 - Back to front across the motor cortex
 - Up and down from the bottom to the top of the brain



Exercise: Miracle-Gro™ for the brain!



BDNF

- Brain-Derived Neurotrophic Factor
- Protein that encourages brain cells to sprout synapses which are crucial to forming the connections in order to learn
- Strengthens cells and protects them from dying

Neurogenesis

- The production of new cells
- Research suggest that exercise may promote this in middle-aged and older adults



Optimize learning through dance!



- Make your classroom SAFE!
- Use stress reduction and relaxation
- Allow students to think and explore!
- Use different types of lighting, music, aromas
 - Remember that music can stimulate or relax and can induce compatible brain wave patterns that enhance learning and retention!

Use dance to encode information in a different way

Allow for individual differences

Access prior knowledge

Use both hemispheres of the brain
Experiment, reflect, learn

Group work minimizes risk

It requires time to dream and develop ideas!



Develop the brain through dance!



- The basal ganglia of the brain contain oscillators which control rhythm and timing of activities
- These oscillators send signals to the appropriate place at the appropriate time
- Proper functioning is necessary for all human activity
- Improper functioning can result in:
 - Lack of focus and concentration
 - Poor coordination
 - Inability to sit still
 - Poor speech development
 - Poor academic performance



Learning to be Rhythmic



Repeat the pattern

- Our brain builds circuits for managing behaviors when behavior is repeated
- When rhythmic patterns are repeated the brain builds rhythmic circuits
- These circuits teach us to control our behavior, focus and be attentive

What patterns??

- Build rhythmic circuits by:
 - Hold and rock the baby
 - Carry infants and walk
 - Play patty cake
 - Jump rope
 - Play hopscotch
 - Play jacks
 - Ride a horse
 - **Dance to music**



Are our children “rhythmically challenged”?



- Premature babies' timing circuits
- Exposure to harmful things
- No bouncing, rocking or rhythmic activity
- Too many cartoons and videogames (non-rhythmic activities) can implant faulty timing circuits



What Happened to our Rhythm?



- Primitive cultures had rhythmic games for their children.
- Native Hawaiian children have ADHD at only 20% of the rate of other children in Hawaii
- Amish children do not have ADHD
- 4x more boys have ADHD than girls
- Perhaps cultures without rhythm did not flourish
- Hawaiian children take hula lessons at an early age
- Amish children have no video games or TV. Rhythmic activities include milking cows, churning butter, etc.
- Girls play hop-scotch, hula-hoop, patty-cake, jacks



Exposing Our Children To Rhythm

- Jumping rope
- Playing jacks
- Playing hopscotch
- Riding a horse
- Twirling a hula hoop
- Dancing to music
- Creating rhythmic patterns



Enhancing Learning with Rhythm



The PS (Parts of Speech) Rap and Dance

- Nouns are people
 - They could be places or things
 - WHAT? We use 'em all day
 - HOW? When we talk and sing
- Stamp R, 2 claps. Stamp L 2x, 2 claps (1&2&3&4)
 - 2 stamps R, 1 clap, stamp L, clap, stomp R (&5&5&7 hold 8)
 - Stamp R, hit L hand on R shoulder 2x Ball change LR (1-2&3&4)
 - Stamp L, hit R hand on L shoulder 2x Ball change RL (5-6&7&8)



The PS Rap and Dance (con't)



Verse 2

- Verbs are action words you know
- We use 'em to run and jump and throw

Rhythm #2

- Stamp R hit side of R thigh stamp L hit side of L thigh
Hit front of thighs 2x, clap once (1&2&3&4)
- With R hand hit L shoulder, With L hand hit R shoulder
Hit R thigh with R hand, hit L thigh with L hand
Hit R foot with L hand in back of L leg, step R (5&6&7-8)



The PS Rap and Dance (con't)



The PS Rap – Verse 3

- Parts of speech we have said
- Jump – Turn around
- They're in your head!

The PS Dance – Rhythm 3

- Step L, ball change in front RL (1&2)
- Step R, ball change in front LR (3&4)
- Jump out (5)
- Shoot R leg back and turn (6,7,8)



The PS Rap and Dance (con't)



The PS Rap – Verse 4

- He and a she
- And a we and a they
- These are pronouns
- That we say

The PS Dance – Rhythm 4

- Step R, brush L, step behind R – LR (1&2&)
- Step L, brush R, step behind L – RL (3&4&)
- Step R, brush L, step behind R – LR (5&6&)
- Step L, touch R next to L (7-8)



The PS Rap and Dance (con't)



The PS Rap (verse 5)

- Pronouns take the place of nouns
- Say it dude
- Without a frown

• The PS Dance:

- Stamp R, draw back, step R (1&2)
- Stamp L, draw back, step L (3&4)
- Claps hands under the R leg, step R (5&)
- Clap hands under the L leg (6&)
- Clap hands behind back and in front (7-8)



It's Your Turn Now



The PS Rap – Verse 6

- There are some words that modify
- They sometimes end with “ly”
- They might be some adverbs you hear
- Can you run as quickly as a deer?
- Those adjectives would be with nouns
- Like some fat clowns or silver crowns.

Can you create the dance?



Dancing Around the Continents



Can you take the information on each continent and create a rhyme and a rhythm?

1. **North America** – Our ancestors rode horses, not cars and even swung a rope. There were bears, and tornadoes, and even gold!
2. **South America** – Here you will find monkeys, and snakes, the rain forest and even a sloth perhaps hanging from a tree.
3. **Australia** – home to the famous kangaroo. It is also home to the koala, platypus, and spiny anteater.
4. **Antarctica** – Home to the penguin, polar bears, and frigid temperatures.



Dancing Around the Continents



Can you take the information on each continent and create a rhyme and a rhythm?

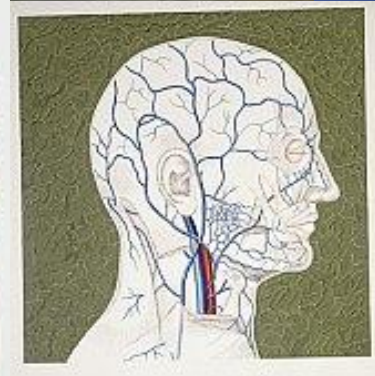
5. **Africa** – This continent is home to many animals including the “king of beasts” the lion and the very long river, the Nile.
6. **Asia** – There are camels in Asia and also flamingoes who are pink. They stand on 1 leg and eat shrimp.
7. **Europe** – Home of the first Olympics where events included running the hurdles. Winter Olympics were also held here including many skiing events.



Other ways to use dance to enhance memory and learning?



- Art?
“A picture is worth a thousand words” – How can visual art works communicate movement?
- English?
Pick scenes from a book and communicate only with body movements, facial expressions, etc.
- Science?
Use movement to portray the physiology of a body system



DANCE...

The union of music and movement that employs both hemispheres of the brain, boosts brain power, and increases brain chemicals that encourage new cell growth!

Why do we dance?

It feels good and benefits the body, the mind, and the spirit.



Questions?

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