August 30, 2017 – 484 MOTOR DEV by Dr. Ogle

SENSORY PERCEPTION – MTR DEV.

1. HOW DO OUR SENSES HELP WITH MOVEMENT?

A. Vision

i. We are able to see where we are relative to where other objects are in our environment.

ii. When objects are moving, we can see if they are getting closer to us or further away from us to help us.

iii. We can also see the outcomes of our movements.

B. Vestibular

i. We can sense the position of our head relative to the rest of our body and gravity.

ii. We can also sense acceleration or deceleration while moving.

C. Tactile

i. We are able to feel if parts of our body are touching other objects and relative changes in pressure and temperature.

ii. We can also feel the outcomes of our movements.

D. Proprioception

i. We are able to sense relative changes in tension and stretch of our muscles, tendons, and joints throughout our body

ii. We are able to sense where our body parts are relative to each other.

E. Auditory

i. We are able to hear people and things around us and can tell if they are getting closer to us or further away from us.

ii. We can hear the outcomes of our movements.

2. HOW DO OUR SENSES WORK TOGETHER?

A. Typically, all of our senses are working in coordination with each other. We may rely more heavily on one of our senses over another if we perceive something more *salient* (more noticeable or important).

B. Auditory + Visual

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i. When we hear something that is perceived as important, we will turn our head towards the direction the noise came from so that we can focus our visual attention towards it.

1. *Example 1: Visual Tracking in Babies.*

C. Occular-Motor Reflex

i. In order to keep watching something that is moving, we will turn our heads to coordinate with our visual system to keep the moving object in our central vision. Also known as "Smooth Pursuit"

1. *Example 1: Watching a rally in a tennis match* https://www.youtube.com/watch?v=9LMrrXpP5QQ

D. Vestibular + Vision

i. In order to maintain visual attention on something while we're moving, we use information from the vestibular system to coordinate with the muscles that control our eyes to keep our eyes relatively still while we're moving.

1. *Example:* https://vimeo.com/53914149

E. Kinesthetic Sense

i. *Kine* (movement) + *aesthesia* (sense) = movement sense

ii. Layman's way of talking about how we can tell if we've moved and the quality of the movement, without going into detail on which sensory systems are involved.

3. WHAT HAPPENS WHEN ONE OR MORE OF OUR SENSES ARE TAKEN AWAY OR DON'T MATCH

A. Car Sickness while reading in the car = sensory mismatch

i. Our tactile and vestibular senses are telling us we're moving, but our eyes are telling us that we're not moving because we're focusing our vision on a book, not on the road in front of us.

B. Decreased vision: https://www.washingtonpost.com/video/world/is-this-the-best-blind-golfer-in-the-world/2017/01/16/327a4e1a-bbe7-11e6-ae79-bec72d34f8c9_video.html?utm_term=.3c0220b7f841 (or watch Hood Adjacent Season 1, Episode 7 – "Golf" to see another example of a blind golfer)

C. Decreased vestibular: https://www.youtube.com/watch?v=hFCECc4lknw

D. Decreased tactile: peripheral neuropathy

E. Decreased proprioception: http://www.radiolab.org/story/91526-the-butchers-assistant/

F. Decreased auditory: riding your bike or walking around campus with headphones in

G. Older adults & Balance