



Disorders of the Spinal Cord

Location and Damage

Psychology 372

Physiological Psychology

Steven E. Meier, Ph.D.

Listen to the audio lecture while viewing these slides

1

Psyc 372 – Physiological Psychology

Overview

- Review anatomy of the Spinal Cord
- Spinal damage can be severe
- Symptoms are correlated with the location of the damage.
- Paralysis can be temporary
 - Occurs due to swelling
 - After about 6 months, you have what you have.

2

Psyc 372 – Physiological Psychology

Complete Transection

- Below the transection
 - Get complete loss of sensation
 - Complete loss of voluntary motor movement
 - Can get complete loss of bladder and bowel control.

3

Psyc 372 – Physiological Psychology

Partial Transection

- Some pathways may be spared.
- Causes distinct patterns
 - Get ipsilateral weakness and muscle spasticity.
 - Ipsilateral loss of discriminative touch
 - Others
- Symptoms may also occur with tumors and cysts.
 - Symptoms are more subtle though.
 - Take longer before you recognize a problem.

4

Psyc 372 – Physiological Psychology

Cervical Damage

- Complete Transection
 - Usually causes loss of function in the arms and legs
 - Called Quadriplegia
- C-1 and C-2 injuries
 - Can result in a loss of
 - Involuntary functions – breathing
 - Injuries above C-4 may require a ventilator for breathing
- C-5 injuries
 - Have control in the shoulder and biceps
 - No control of wrist or hand

5

Psyc 372 – Physiological Psychology

Cervical Damage

- C-6 injuries
 - Have wrist control
 - Have no hand function
- C-7 and T-1 injuries
 - Can straighten arms
 - May have dexterity problems with hands and fingers.

6

Thoracic

- Injuries usually affect the chest and legs
- T-1 – T-8 injuries
 - Get poor trunk control
 - Good hand control
 - Poor abdominal muscle control
 - Called Paraplegia
- T-9 to T-12 injuries
 - Have good truck control
 - Have good abdominal muscle control.
 - Sitting balance is very good.

7

Lumbar and Sacral

- Usually result in some decreased functioning in the hips and legs.
- Bowel and Bladder problems
- Sexual dysfunction problems
- Injuries
 - L-2 to L-4 Loss of Knee Jerk reflex
- Generally, get decreasing control of the hip flexors and legs.

8

Other Problems

- Sexual functioning is disrupted
- Male fertility may be affected,
- Female fertility is generally not affected.
- Low blood pressure
- Inability to regulate blood pressure.
- Reduced control of body temperature
- Inability to sweat below the level of injury
- Chronic pain

9

Conclusion

- Do not want to damage your spinal cord.
- If damage occurs, PT work can help significantly.
- Lots of support mechanisms
- Lots of Research
 - Stem Cell
 - Computer
 - Problem, many neurons come from cortical areas.
 - Other problems too. Finding the right pathway

10