



Reduction of force using cane

Presenter :archana k

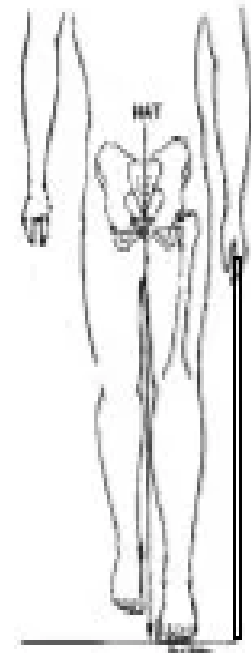
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Use of cane ipsilaterally

- Pushing downward on a cane held in the hand on the side of pain or weakness reduces superimposed body weight by the amount of downward thrust.
- The weight of the head arm and trunk would follow the arm to the cane.
- Someone can push down on a cane with approximately 15% of his/her body weight.
- The body weight that passes through the cane will not pass through the hip joint and will not create an adduction torque.

Ipsilateral Cane





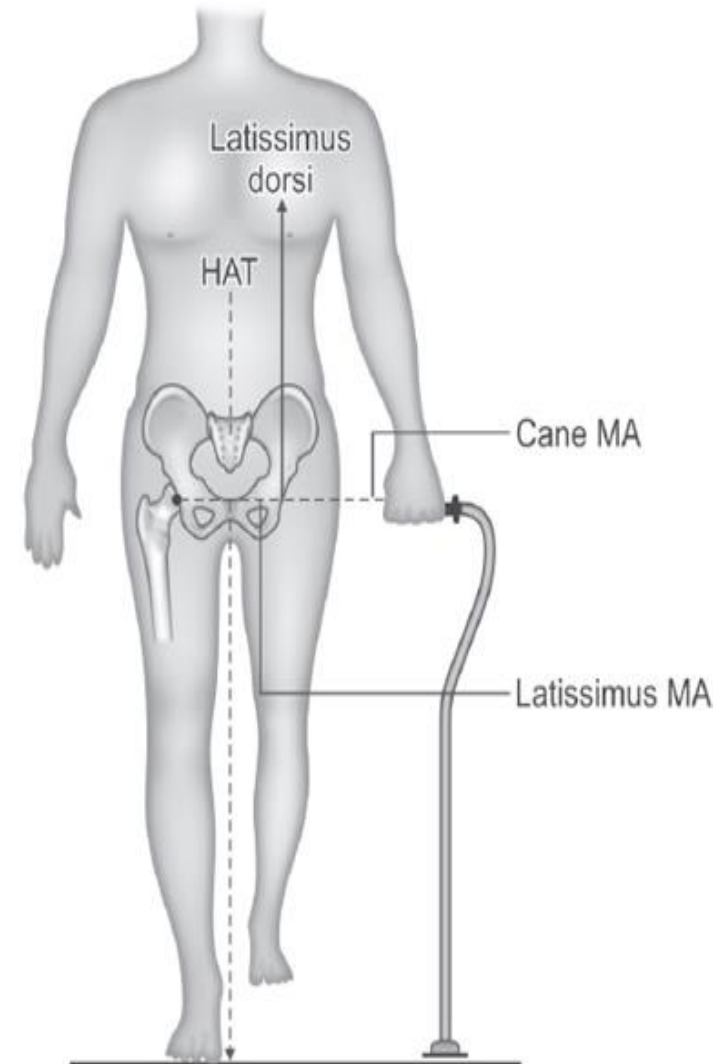
- With a cane on the ipsilateral side , the base of support even farther lateral to the hip joint than with no cane.
- The subject must lean farther lean laterally during ambulation.
- This will increase the lateral lean of the trunk over the stance foot.
- Increase the lean requires more work for the rest of the body and may increase the load on the neighboring joints such as lumbar spine , knee or ankle



- **Increase the lean may also cause the individual to more weight on the cane** that will put the subject more risk for upper extremities overuse syndrome such as carpel tunnel syndrome

Use of cane contralaterally

- When the cane is moved to the opposite the painful or weak hip joint ; the body weight passing through the weight bearing hip joint reduced by approximately **15 % of the body weight** .
- The cane is now in a position to assist abductor muscle.
- It will reduce the load on the hip joint .
- The center of mass will follow the base of support, so that subject can stand erectly.





- Patients typically are instructed to hold the cane in the hand opposite of (contralateral to) the involved lower extremity.
- canes reduce the biomechanical load on the involved lower extremity, provide a more natural reciprocal gait pattern with the opposite arm and leg moving together, and provide an **increased base of support**.
- When the cane is placed in the contralateral hand, **there is a reduction in the lateral shifting of the center of mass** compared to using the cane on the same side (ipsilateral) as the involved lower extremity.



