

# **Contributory Factors to Disability and Impairment: Obesity – Lumbar Spine and Lower Extremity**

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# PRESENTER DISCLOSURE INFORMATION

Contributory Factors to Disability and Impairment  
Obesity - Lumbar Spine and Lower Extremities

The following conflicts exist with this talk:  
None

Neither I nor my professional corporation have received anything of value from or own stocks in a commercial company or institution related directly or indirectly to the subject of this talk.

# Low Back Pain

- ♦ Second most common reason for primary care Dr. visits
- ♦ Estimated costs of \$200 billion/year
- ♦ Obesity associated with Hypertension. Diabetes, Heart Disease, some Cancers, Osteoarthritis, and more and more clearly, with Low Back Pain

# Prevalence

- ♦ Obesity = BMI of  $30\text{kg}/\text{m}^2$  or more
- ♦ Severe obesity = BMI of  $40\text{Kg}/\text{m}^2$
- ♦ Over weightness = BMI of 25.0-29.9  $\text{Kg}/\text{m}^2$
- ♦ 42% of Americans are obese
- ♦ An additional 9% are severely obese
- ♦ Ranked low to high: Asians(17%),Whites (42%), Hispanics (45%), Blacks(50%)
- ♦ NCHC Data Brief #360 Feb 2020

# Low Back Pain

- ♦ Chou et al have shown men with higher BMI and waist hip ratio were associated with high intensity LBP and high disability.
- ♦ No evidence that lean body mass was associated with such problems
- ♦ *Medicine* 2016 Apr, 95(15). e3367



# Low Back Pain

- ♦ Shiri et al did a metanalysis which found that overweightness as well as obesity increased the risk of low back pain
- ♦ They also found that for those with moderately heavy or heavy work, lifestyle changes reduced LBP
- ♦ Shiri, American Journal of Epidemiology, 171:2(2009)

# Low Back Pain

- ♦ But Dafina et al did not find any significant difference of the impact of obesity in back pain. They quoted several other studies from earlier in this century which supported their conclusion.
- ♦ Dafina, Med Arch 2015 Apr:69 114-116

# Low Back Pain

- ♦ Frilander et al did a longitudinal study and found that BMI among men at age 20 predicted LBP later in life. Both general and abdominal obesity were associated with radiating LBP
- ♦ [Bmjopen.bmj.com/content/5/8e007805](http://Bmjopen.bmj.com/content/5/8e007805)



# Low Back Pain

- ♦ Shiri reported that the effect of leisure time activities on LBP is still unclear. Previous observational studies reported inconsistent results. He concluded that obesity increased the risk of LBP but walking and cycling reduced the risk
- ♦ Shiri R. Arthritis Care Res. 2018;doi: [10.1002/acr23710](https://doi.org/10.1002/acr23710)

# Low Back Pain

- ♦ Roffey pointed out that more studies have suggested associations between obesity and inflammation. These studies have focused on CRP, TNF, interleukin-6, and adiponectin. So it isn't total body weight as much as fat mass that may be at play here.
- ♦ Roffey DM Current Obesity Reports; 2; 241-250(2013)

# Low Back Pain

- ♦ Dario studied twins and noted that while obese patients are 2X as likely to have LBP, the association diminishes when factoring in genetic confounders. That suggests that weight loss may not be effective treatment in some genetically compromised pts.
- ♦ Dario AB [thespinejournalonline.com/articleS1529-9430\(15\)00099-6/abstract](http://thespinejournalonline.com/articleS1529-9430(15)00099-6/abstract)

# Low Back Pain

- ♦ Sheng et al found that disc disease and LBP are linked with obesity and overweightness. But also weight predicted LB disease but not cervical disease supporting the concept of mechanical rather than inflammatory damage.
- ♦ Sheng B, Int. J. Environ. Res Public Health, 2017, 14, 183

# Low Back Pain

- ♦ Romero-Corral et.al has shown that the accuracy of BMI in the intermediate ranges of body weight is limited because BMI can't discriminate fat from lean mass. But BMIs over 30 have an excellent specificity for diagnosing obesity in both sexes
- ♦ Romero-Corral A, Int J Obes (Lond).2008 Jun; 32(6);959-966



# Hip

- ♦ Gelber found studies which showed that higher BMIs and older age were associated with THR. Women with the highest BMIs were 2X more likely to get THR than those with the lowest BMIs. He estimated that absent obesity hip OA would decrease by 25%
- ♦ Gelber A, Am J Medicine; 114;159 (2003)

# Hip

- ♦ But Schwarze et al reported that in their study obesity had only a weak association with hip pain. Depression had a strong association with hip pain.
- ♦ Schwarze M  
[onlinelibrary.wiley.com/doi/full/10.1002/msc.1380](https://onlinelibrary.wiley.com/doi/full/10.1002/msc.1380) (2019}

# Hip

- ♦ Tuchsén wrote that hip pain increased with higher BMI, whole body vibration, and heavy work.
- ♦ The literature also documents that a 1 pound wt. loss results in 6 lbs less force on the hip joint.
- ♦ Tuchsén F [www.jstor.org/stable/40967264?seq=1](http://www.jstor.org/stable/40967264?seq=1) 2003

# Knee

- ♦ Messier reports that there is a significant direct association between BMI and peak compressive forces in the knee. Each lb. lost results in a 4 lb. reduction in knee joint load
- ♦ Messier S [doi.org/10.1002/art.21139](https://doi.org/10.1002/art.21139)

# Foot & Ankle

- ♦ Dufour reports that recent studies confirm that obese pts are more likely to have foot pain than slim pts.
- ♦ 3-6 X body wt. is transmitted to the foot and ankle during normal walking.
- ♦ Dufour A Obes Res Clin Practice 2017 Jul-Aug, 11(4) 445-453



# Foot & Ankle

- ♦ Butterworth reports that general foot pain and plantar heel pain are strongly associated with increasing BMI
- ♦ Obesity is strongly associated with pronated flat feet and increased plantar pressure when walking.
- ♦ Butterworth P J Foot Ankle Res 2015; 8(suppl 2) O5

# Foot & Ankle

- ♦ Walsh et al report that as body wt. and plantar pressure increase, foot pain increases and the midfoot may be the most vulnerable site for pressure related pain.
- ♦ Walsh T J of Foot and Ankle Res(2017) 10:3 DOI 10.1186/s-13047-017-0214-5