

Obesity vs. Disability

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With today's fast food society and the rate of obesity on the rise, we must ask the question, "is obesity compounding injuries and delaying the healing process", which further complicates an adjuster's claim management strategy?

This dilemma has recently come to light while performing a Kinesthetic Video Analysis. While watching the video surveillance which has been captured over the course of a year, the subject's gait pattern made significant changes for the worse, without any documentation as to why. As the year progressed the more the subject walked or moves like a pregnant woman. The subject was gaining weight right around their midsection, just like a pregnant woman. They had put enough weight on their abdomen to alter their centre of gravity. So much that they had to lean back and shuffle when they walked. Since their gait had been significantly altered, what would the effects be on the body?

In this case, the first problem would be an increase in low back pain. With the way the subject was walking I researched the effects of pregnancy on lower back, and found that "when pregnant women try to counter balance the effect of the protruding abdomen by hyper extending the vertebral column, resulting in an exaggerated lumbar curvature, strained muscles and a peculiar gait"¹. The muscles strained would be the erector spinae. Since these muscles were not strained during the accident, but claimed/alleged during the months following the loss, it is conceivable that not the accident that caused discomfort and the manner in which she walked.

Along with peculiar gait, will come peculiar forces acting on the joints. The body is aligned to handle certain torques during locomotion. When these forces are applied from a different angle than designed for, the result can be muscle strains, and joint problems from the forces not being applied to the articulating surfaces as they are intended for. This can lead to hip knee ankle and back problems, as well as a claim that seems to mysteriously move all over the claimant's body.

Another consideration is what happens if an obese person is in an accident. Biomechanics and Physics teach us that ($F = MA$), Force = Mass multiplied by Acceleration. If you have an obese person in a car which slams into something and has a rapid deceleration or stop, and we apply Newton's first law, **the law of inertia**, which states "a body at rest will stay at rest until a net external force acts to move (accelerate) it and that a body in motion will continue to move at a constant velocity and in the same direction until a net external force acts to change that velocity"². With that logic, an obese person will have a larger mass than a non obese person, so using the $F=MA$

¹ Van De Graaff, Kent. **Human Anatomy, Updated 5th edition** .McGraw Hill 2000.

² Krieghbaum Ellen., Barthels Katharine M., **Biomechanics A Qualitative Approach for Studying Human Movement fourth edition**. Allyn & Bacon, 1996.

formula they will have greater amount of force acting on their body in an accident. What this means is that when that obese person gets in an accident the force of them against the seatbelt will be greater. Also the force of their head snapping forward and backwards will be greater (the mechanism for whiplash), and this is without any guarantee that their bone structure, or musculature/ligaments will be stronger. This could possibly lead to a greater risk of injury.

For Example:

<p>Person One Female 168 cm 56 kg BMI 19.8 (normal range) $a = (v_2 - v_1) / t$ $a = (0 - 13.9\text{m/s}) / 2 \text{ s}$ $a = (-13.9\text{m/s}) / 2 \text{ s}$ $a = -6.9\text{m/s}^2$ $F = MA$ $F = 56 \text{ kg } (-6.9\text{m/s}^2)$ $F = 386.4\text{N}$ $1\text{N (Newton)} = 1\text{kg/m/s}^2$</p>	<p>Person Two Female 168 cm 101 kg BMI 35.8 (obese range) $a = (v_2 - v_1) / t$ $a = (0 - 13.9\text{m/s}) / 2 \text{ s}$ $a = (-13.9\text{m/s}) / 2 \text{ s}$ $a = -6.9\text{m/s}^2$ $F = MA$ $F = 101 \text{ kg } (-6.9\text{m/s}^2)$ $F = 696.9 \text{ N}$ $1\text{N (Newton)} = 1\text{kg/m/s}^2$</p>
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As you can see in the above calculation by taking a normal range (BMI) female and comparing the forces acting upon her just by doubling her weight, they almost double in magnitude in an accident at 50 km/h. In this example it took 2 seconds for the car to stop, whereas in most accidents the deceleration takes place in less than 1 second. From this we can conclude that not only will obese people be more at risk for injury in an accident, they may have more “pre” and “post” accident complications of their injuries. Although the above example uses a female, both sexes will experience the same complications as a result of obesity.

Obesity is becoming an epidemic in North America. As an adjuster it can be a major factor in how you handle a claim. It is something to be aware of during the claim process and you should ask yourself, if “obesity is the cause of the claim, is it compounding claimed injuries, or is it a factor in severity of injury?” If the answer is yes, proper strategies must be taken to ensure the proper handling of a claim. A Kinesthetic Video Analysis, is an excellent tool to ensure that the biomechanics of an obese claimant are within their claimed limitations. It can also help to determine if they do have a limp or other problem with their gait pattern and what the cause of the anomaly is a result. A claim should not be terminated on the basis of obesity; but if obesity is compounding a claim, then it should be dealt with properly.

Liam M^cGrath is a Certified Kinesiologist with experience in the area of injury rehabilitation. He is currently the Director of Injury Disability Examination Analysis, a National company specializing in serving the insurance and corporate industries. If you have any questions concerning this article or Kinesthetic Video Analysis, please do not hesitate to contact him at:

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