



## **Strength to Body Weight Ratio: The Connection to Wellness**

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### **Summary**

*A worker's muscular strength should be proportionate to his/her body weight. If it is, the worker is more efficient and has fewer medical and workers' compensation claim costs.*

Muscular strength relative to body weight (SBW) is not a new concept. SBW has been used in the sports world for decades because the research shows athletes with high SBW scores perform better. A high SBW means the athlete is very strong with a very healthy body weight.

Intuitively, one would think that a high SBW with the industrial worker would result in a more efficient worker that would also result in less absenteeism, fewer medical claims and fewer injuries.

Over the years, IPCS has taken the position that a worker's SBW ratio was critical to the worker's ability to safely perform the essential functions of the job and to his/her well-being.

### **Why SBW?**

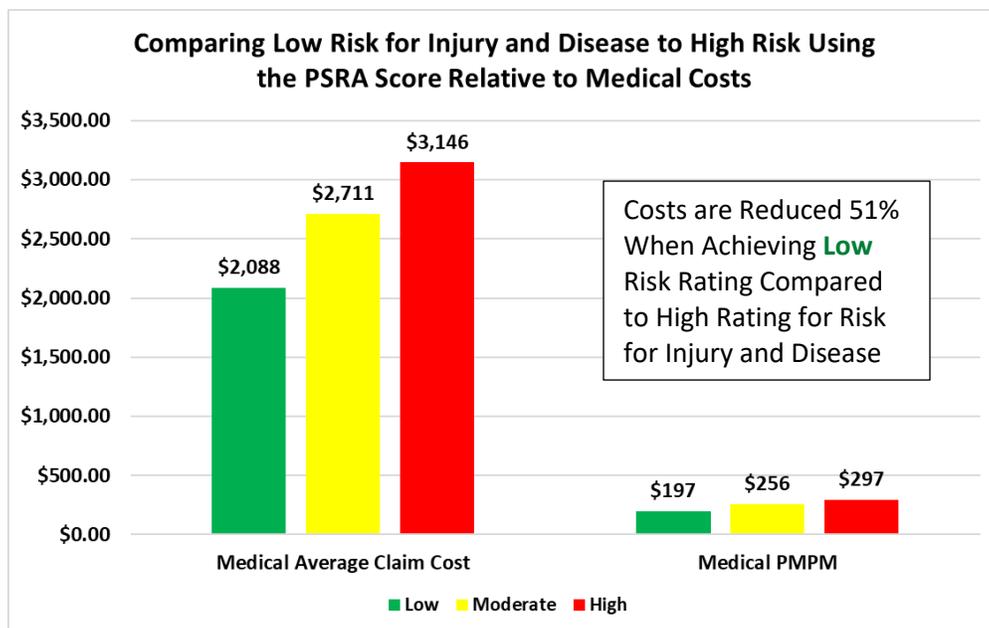
If used correctly, the SBW is a very useful tool in the new hire screening process to ensure that the company is hiring a healthier and more fit person for a physically demanding job. The SBW is also an important determinant when assessing a worker's ability as part of the return-to-work process.

A third application of the SBW, and one that is becoming more critical, is its use within a wellness biometric screening program. Most biometric screening programs do not assess

strength. The IPCS analysis shows a strong connection between muscular strength and medical and workers' compensation claim costs.

### Strength to Body Weight vs. Medical Claim Costs

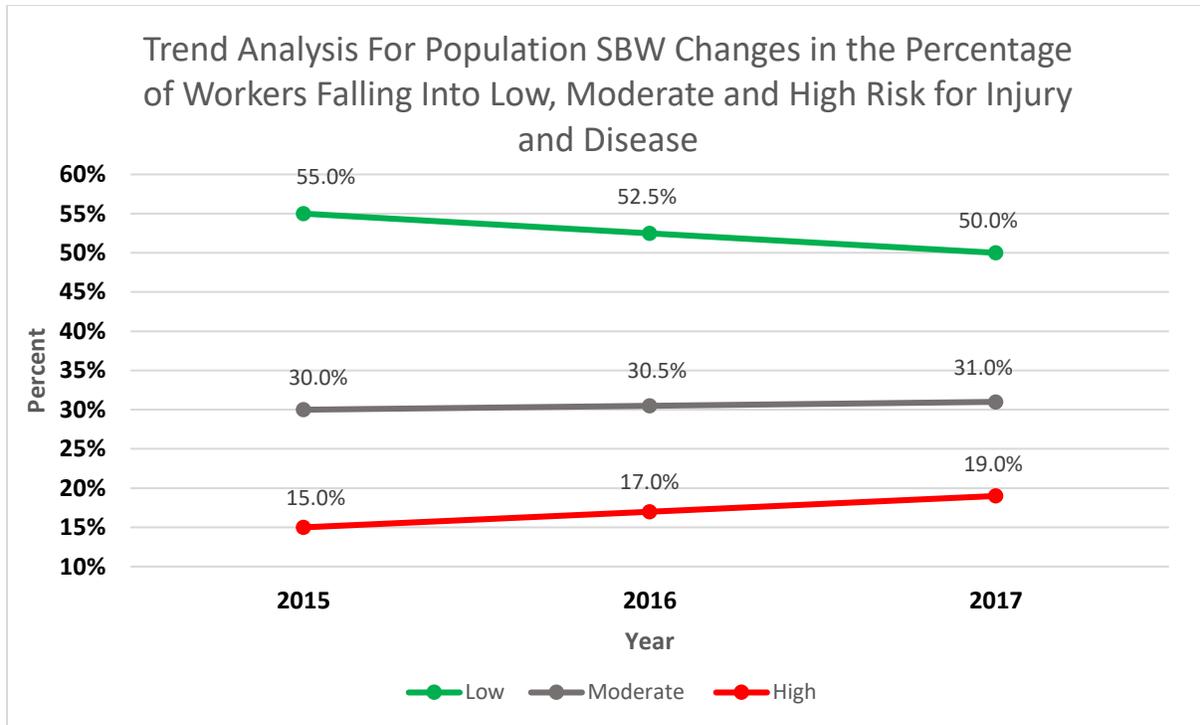
IPCS has analyzed SBW scores over the last 3-years relative to medical claim costs for about 3,000 nurses. Does a worker with high muscular strength and a healthy body weight have medical costs that are less compared to the worker with less muscular strength and an unhealthy body weight? The chart below clearly shows there is a significant difference in medical claim costs for those workers with a high SBW compared to a low SBW. A high SBW score puts the worker at low risk for injury and disease and the opposite is true for a low SBW score.



### What Does A Trend Analysis Say About SBW?

When performing a trend analysis for about 95,000 SBW scores over the past 3-years in terms of changes in percentage of workers falling into each of the risk categories for injury and disease (low, moderate and high), the following chart shows a decreasing trend in the percentage of workers falling into the low-risk category but an increasing trend for the percentage of workers falling into the high-risk category. This is troubling.

- These trends support the IPCS finding that the absolute strength of the worker today is about 25% less than it was 10-years ago and the worker is 13 pounds heavier.
- Both the loss of strength and increase in body weight will lower the SBW score.
- This information should be the impetus for wellness programs that focus on increasing muscular strength and a healthier body weight.



Since the onset of the 21<sup>st</sup> century, many research studies have been published showing the importance of strength to body mass index (BMI) ratio in terms of safety and performance. In general, workers with high BMI's ( $\geq 40$ ) have less physical functionality. They have more difficulties with balance, stability, stair climbing and walking as well as critical essential functions of the job such as lifting, carrying, reaching, bending, stooping, and climbing.

Although IPCS does not use BMI in its calculations, the IPCS data analysis shows a significant and negative correlation between BMI and SBW meaning that as SBW decreases, BMI increases. Intuitively, this makes sense because the SBW does include body weight as does BMI.

It has been IPCS's position that muscular strength is a critical risk factor regarding the health, safety and well-being of the worker. The outcomes presented in this brief paper show the importance of strength relative to body weight. Unfortunately, the prognosis for improvements with SBW scores doesn't look good. In fact, the trend analysis shows just the opposite occurring – the SBW scores are getting lower.

*The good news is that SBW scores can be improved for most any age group through weight loss and an increase in muscular strength, thus improving the health of the worker.*