



WAVE
ripples for change

WAVE Pilot Study: Creation of Education Tools to Promote Proper Body Composition Analysis and Body Image Awareness

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Background: The Wave~Ripples for Change: Obesity Prevention in High-School Soccer Players research project is a 5-Y USDA funded project focused on building healthy nutrition, physical activity and life skills for healthy weight maintenance. The intervention includes providing face-to-face sport nutrition, physical activity and life-skills lessons, assessments of body composition, physical activity, and nutrition, and on-line immersive learning to reinforce the lessons. **Objective:** Develop two lessons to educate youth soccer players (age=14-19y): 1) For males, the focus is body weight and composition, and factors related to building/retaining muscle mass to reduce risk of inappropriate diet and supplement use; 2) For females, the focus is body image and associated issues about body weight and performance to reduce the risk of body dissatisfaction and disordered eating. **Method:** Review the research literature and identify key body composition and body image issues unique to males and females, especially active high school youth. Then develop two different lessons that will encompass the needs of each gender utilizing photos, online capabilities and common misconceptions about food, exercise and body size. **Results:** Research shows that active males are more interested in gaining weight, specifically muscle mass, which increases the risk of using unhealthy diets and supplements promising increased in muscle mass. Active females are more interested in being thin and small stature, which can lead to disordered eating and body image issues. Two educational lessons were developed to address the different weight and body composition issues identified for each group. For the males, the lesson focuses on understanding body composition and how it is measured, the impact of body composition on health and performance, and factors that improve body composition, including appropriate diet and exercise recommendations. For the females, the lesson focuses on understanding body composition and image, and how inappropriate beliefs about body shape and size increases the risk of body dissatisfaction. Approaches to improve body image and satisfaction are presented and discussed. **Conclusions:** Lessons will be tested on the WAVE pilot study high school soccer players (n=26). Based on feedback from students, changes will be made to the lessons prior to program delivery to the larger intervention study beginning in fall 2015.

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Background

The Wave~Ripples for Change: Obesity Prevention in High-School Soccer Players research project is a 5-Y USDA funded project focused on building healthy nutrition, physical activity (PA) and life skills for healthy weight maintenance. The intervention includes face-to-face sport nutrition, PA and life-skills lessons, assessments of diet, body composition and PA on/off the soccer field, and on-line immersive learning to reinforce the lessons.

Lessons cover sport nutrition topics such as pre-, during- and post-exercise fueling and hydration. For this project, the focus was on the development of two lessons covering body composition, satisfaction, and image issues specific to high school (HS) athletes. Body dissatisfaction is defined as the differences between a person's current view of themselves and the body that they perceive as ideal.¹ Typically males athletes strive towards lean and muscular physiques^{2,3}, while female athletes desire to have small, thin bodies⁴. Active males are interested in gaining weight, specifically muscle mass, which leads to increased risk of using unhealthy diets and supplements promising to increase muscle mass. Active females are more prone to experience disordered eating and body image issues. Body dissatisfaction has been associated with low self-confidence and eating disorders in female athletes^{5, 6}. Results from an introduction survey given to WAVE pilot HS soccer players (n=53 eligible youth) showed that 18 (33%) reported they wanted to change body weight (gain or lose). Methods students reported using to change their weight included: exercise (n=12), eating less food (n=3), eating fewer calories (n=3), eating fruits and vegetables (n=4), skipping meals (n=2), drinking more water (n=6), fasting (n=1), using meal replacement foods (n=1), and vomiting or using laxatives (n=1)⁷. These results emphasize the need for lessons on body satisfaction for this population.

Research shows that athletes seek sport nutrition knowledge primarily from parents⁸ and coaches⁹, yet these individuals may not have adequate or accurate diet and nutrition knowledge to be advising young athletes. The most common misconceptions observed in the active youth demographic include the following:

- There is a perfect body image for a particular sport.
- Excess protein loading, excess weight lifting and/or exercise will increase sport skills.
- A certain body composition guarantees athletic success.

The WAVE curriculum is unique in that it was created to focus specifically on HS athletes, and incorporates healthy life skills to help dispel the myths about body size and sport performance. Athletes also need an appropriate 'reference' for a healthy athletic body size demonstrating that body size and fat levels can vary widely for various sports (Healthy body fat ranges: 14-24% women; 6-17% men)¹⁰. Current sport nutrition programs focus more on depression in youth¹¹ or eating disorder issues¹². Although disordered eating is discussed, the focus is developing healthy lifestyles, including a realistic body image and size.

Figure 1: A Lesson for Girls

Body Image Goals	Myths
Small/Thin Little to no fat	Thinner athletes can perform better. Athletes look the same for most sports: tall and lean.

Key Points:

1. Body composition is a result of diet, exercise and genetics. Youth are still growing and developing, which means their current body composition is changing.
2. Comparison of Body Mass Index (BMI, kg/m²) to the assessment of body composition will be reviewed. Body composition results can vary with the technique used including DXA, BodPod, bioelectrical impedance, and skinfold measurements.
3. Although healthy body composition ranges have been identified, there is no "perfect" composition.
4. Disordered eating is more common in athletes than non-athletes, and typically attributed to the emphasis placed on thinness in lean build sports such as running and water sports
5. Body image can be influenced by many factors, including external factors such as media and peers. An individual needs create a body image for themselves, without undue influence from external sources.
6. Genetics is a major determinate of the body. Understanding one's genetic predisposition for body size and composition can result in a more realistic body image. A more positive body image can aid in overall health satisfaction.
7. Social media positive body image campaigns exist such as #BodyPositive and other related hashtags.

Professional Athletes

Figure 2: A Lesson for Boys

Body Image Goals	Myths
Lean & muscular Little to no fat.	Athletes look the same for most sports: big and muscular Protein and heavy lifting will help athletes bulk up

Key Points

- Key points 1-3, 5 and 6 from Table 1.
- Some athletes believe that by eating high amounts of protein and doing high intensity weight training will help them gain more muscle. This approach can be counterproductive without an appropriate balance between diet, exercise and recovery time.
- Social media positive body image campaigns are available, such as @malebodyimage1 on twitter and the phrase "It's just as hard to be Ken as it is to be Barbie"

Professional Athletes

Objective

Develop two lessons to educate HS youth soccer players (age 14-19y) on body composition and body image:

- 1) For males, the focus is body weight and composition, and factors related to building/retaining muscle mass to reduce risk of inappropriate diet and supplement use;
- 2) For females, the focus is body image and associated issues about body weight and performance to reduce the risk of body dissatisfaction and disordered eating.

Method

First, the research literature was reviewed and key body composition/image issues unique to males and females were identified, especially for active HS youth. Second, two different lessons were developed to encompass the needs of each gender utilizing sport specific photos, online capabilities and common misconceptions about food, exercise and body size that athletes encounter. The lessons will be 'pilot tested' with the WAVE pilot HS soccer players. Key lesson objectives will be shared with soccer coaches and parents.

Results

For the females, the lesson focuses on understanding body composition and image, and how inappropriate beliefs about body shape and size increases the risk of body dissatisfaction. Approaches to improve body image and satisfaction are presented and discussed. For the males, the lesson focuses on understanding body composition, how it is measured, impact of body composition on health and performance, and factors that improve body composition, including appropriate diet and exercise recommendations. **Figure 1** outlines the development of the body image lesson for girls, while **Figure 2** outlines the lessons on body composition and muscle building/maintaining for the boys.

Discussion

Pilot testing of these lessons will occur with HS soccer athletes in Fall 2015, followed by discussions with students, coaches and parents. Feedback about lesson length, content and follow-up lessons will help inform the final lesson draft, which will be used for the WAVE intervention.

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