Interscholastic Female Wrestler's Percent Body Fat And Minimum Wrestling Weight Values: Is The 12% Body Fat Minimum Too Low?

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Abstract

Introduction: This study aimed to provide a descriptive summary of body fat percentage (%BF), sum of skinfolds (SSF), and Minimum Wrestling Weight (MWW) values across all 14 weight classes among interscholastic female wrestlers in Illinois. A secondary aim was to evaluate the likelihood that 12%BF occurs among female wrestlers and assess whether the current minimum %BF threshold should be reconsidered by the sport governing body (SGB). **Methods:** A retrospective analysis was conducted on data from 2,291 female wrestlers during the 2023–2024 Illinois High School Association (IHSA) season. As part of mandated preseason weight certification, skinfold measurements were taken, and %BF was estimated using the Slaughter equation. Descriptive statistics and frequency analyses were used to establish normative values for %BF, SSF, and MWW. MWW and minimum weight class (MWC) were calculated using both the current minimum 12%BF standard and an alternative 19%BF threshold based on the 5th percentile of the sample. **Results:** The mean %BF was 29.7 ± 8.1%, with only 0.17% of athletes (n = 4) falling at or below 12%BF. On average, wrestlers were 27.2 ± 14.2 lbs. above their MWC at 12%BF and 17.7 ± 14.1 lbs. above at 19%BF. Reaching MWC would require 10.9 weeks under the 12%BF threshold versus 6.7 weeks at 19%, using the NFHS 1.5% weekly weight loss limit. The current weight distribution was negatively skewed, while the 12%BF threshold resulted in a highly positive skew. In contrast, the 19%BF threshold produced a more normalized distribution. A strong positive correlation between %BF and MWC was observed (r = 0.84, p < 0.001). **Conclusion:** Achieving 12%BF is improbable and rare among female high school wrestlers. Raising the minimum threshold to 19%BF may reduce harmful weight-cutting practices, improve athlete safety, and promote more equitable weight class distribution.

Keywords: Female Wrestlers, Body Composition, Weight Certification, Minimum Weight Class

Resumen

Introducción: Este estudio tuvo como objetivo proporcionar un resumen descriptivo de los valores de porcentaje de grasa corporal (% GC), suma de pliegues cutáneos (SSF) y peso mínimo de lucha libre (MWW) en las 14 categorías de peso entre luchadoras interescolares en Illinois. Un objetivo secundario fue evaluar la probabilidad de que se presente un 12 % GC entre luchadoras y evaluar si el umbral mínimo actual de % GC debería ser reconsiderado por el organismo rector del deporte (SGB). **Métodos:** Se realizó un análisis retrospectivo de los datos de 2291 luchadoras durante la temporada 2023-2024 de la Asociación de Escuelas Secundarias de Illinois (IHSA). Como parte de la certificación de peso obligatoria de pretemporada, se tomaron mediciones de pliegues cutáneos y se estimó el % GC utilizando la ecuación de Slaughter. Se utilizaron estadísticas descriptivas y análisis de frecuencia para establecer valores normativos para % GC, SSF y MWW. El MWW y la categoría de peso mínimo (MWC) se calcularon utilizando el estándar actual de 12% BF y un umbral alternativo de 19% BF basado en el percentil 5 de la muestra. **Resultados:** El % BF medio fue de 29,7 ± 8,1%, con solo el 0,17% de los atletas (n = 4) cayendo al 12% BF o por debajo de él. En promedio, los luchadores estaban 27,2 ± 14,2 lbs. por encima de su MWC al 12% BF y 17,7 ± 14,1 lbs. por encima al 19% BF. Alcanzar la MWC requeriría 12,8 semanas por debajo del umbral del 12% BF frente a 8,1 semanas al 19%, utilizando el límite de pérdida de peso semanal del 1,5% de la NFHS. La distribución del peso actual estaba sesgada negativamente, mientras que el umbral del 12% BF resultó en una asimetría altamente positiva. En contraste, el umbral de 19% de GC produjo una distribución más normalizada. Se observó una fuerte correlación positiva entre el %GC y el MWC (r = 0,84, p < 0,001).

Conclusión: Alcanzar el 12% de GC es improbable y poco común entre las luchadoras de secundaria. Elevar el umbral mínimo al 19% de GC puede reducir las prácticas perjudiciales de corte de peso, mejorar la seguridad de las atletas y promover una distribución más equitativa de las categorías de peso.

Palabras Clave: Luchadoras, Composición corporal, Certificación de peso, Categoría de peso mínimo

Introduction

In the winter of 1997, over the course of 33 days, three American collegiate wrestlers tragically died from dehydrated-related hyperthermia while attempting to cut excessive weight for their competitions ("From the Centers for Disease Control and Prevention. Hyperthermia and Dehydration-Related Deaths Associated with Intentional Rapid Weight Loss in Three Collegiate Wrestlers--North Carolina, Wisconsin, and Michigan, November-December 1997," 1998). In response, the National Collegiate Athletic Association (NCAA) launched one of the most significant health initiatives in American sports history, the Wrestling Minimum Weight Program, during the following season (NCAA Wrestling Weight-Certification Program, 1998). Shortly after, the National Federation of State High School Associations (NFHS) recommended that all U.S. states implement similar weight-management programs for high school wrestling. The purpose of the Wrestling Minimum Weight Program is to safeguard the health and well-being of wrestlers by guiding them toward an appropriate weight class. The program aims to prevent unhealthy and unsafe weight-cutting practices through education and best practices. To achieve these goals, wrestlers must undergo a pre-season evaluation to assess their hydration status (to confirm a euhydrated state), body weight, and body composition to estimate body fat percentage (%BF) and fat-free mass (FFM). The data from these assessments are then entered into an online weight certification submission system called the Optimal Performance Calculator (OPC) provided by the National Wrestling Coaches Association (NWCA) to determine each wrestler's Minimum Wrestling Weight (MWW) and Minimum Weight Class (MWC) (NWCA, n.d.) As part of the program, a wrestler's MWC cannot be below a level that would result in less than 7% body fat for high school male wrestlers or 5% body fat for collegiate male wrestlers.

Wrestling is one of the most popular interscholastic sports in the United States, with over 300,000 participants. Wrestling is also unique in that it is the only sport, interscholastically, that requires athletes to compete within designated weight classes and the only sport that mandates a Weight Certification Program. Historically a male-dominated sport, wrestling saw the emergence of competitive female divisions shortly after the implementation of the Minimum Weight Program. Over the past decade, the number of high school girls' wrestling teams has quadrupled nationwide, while participation surged fivefold to over 64,000 wrestlers in 2024 (*NFHS 2023-24 Participation Numbers Released*, 2024).

To promote safe weight-class selection for female wrestlers, sport governing bodies (SGBs) consulted sports medicine experts and established a minimum body fat threshold of 12%. This standard was presumably based on position statements from the American College of Sports Medicine, the American Academy of Pediatrics, and the National Athletic Trainers' Association (Carl et al., 2017; Oppliger et al., 1996; Turocy et al., 2011). However, the physiological rationale for the 12% minimum has recently come under scrutiny (Horswill & Roedeshimer, 2022; Jagim, Moschelli, et al., 2024).

Efforts to achieve a body fat percentage of 12% may involve intentional food restriction, excessive physical activity, and dehydration practices and behaviors that can increase the risk of conditions such as the Female Athlete Triad (Brown et al., 2017) and Relative Energy Deficiency in Sport (REDs) (Burke et al., 2023; Mountjoy et al., 2023). Both syndromes stem from low energy availability (LEA) and can lead to serious health consequences, including menstrual dysfunction, reduced bone mineral density, and a heightened risk of injury and illness (Torstveit et al., 2023).

However, the direct relationship between wrestling participation and these risk factors remains largely unexplored. To address this gap, a clearer understanding of preseason body composition and the feasibility of achieving a minimum weight based on 12% body fat in this population is needed.

Until recently, research on female wrestling has been limited, resulting in a lack of data on average percent body fat (%BF), preseason weight distribution, and safe weight reduction when using 12% body fat as the minimum threshold. This gap is particularly concerning given the significant growth and biological maturation that occur during high school. It has recently been proposed that interscholastic high school female wrestlers increase the minimum threshold from 12 to 19 %BF (Jagim et al., 2025).

Therefore, the purpose of this study aimed to provide a descriptive analysis of %BF, SSK, and MWW values in female high school wrestlers in Illinois. Additionally, it examined the prevalence of the 12% BF minimum threshold in this population and explored whether an alternative %BF should be considered for MWW and MWC

determination. Specifically, recent concerns have emerged regarding the validity and safety of this benchmark, as there is little supporting evidence confirming its appropriateness for female wrestlers (Horswill & Roedeshimer, 2022; Jagim, Moschelli, et al., 2024). Despite this, the current standard for determining minimal wrestling weight in female athletes remains set at 12%BF. This 12% threshold was originally established using theoretical models, limited cadaver studies, and the assumption that it would provide sufficient stored energy and lipid precursors to support both health and performance in female athletes (McArdle et al., 1991). Given the uncertainty surrounding the 12 %BF threshold, re-evaluating its appropriateness in female wrestlers is both necessary and justified to determine whether an alternative minimum standard would better protect their health and well-being. To do so, the distribution of %BF in the preseason was examined for the likelihood of the current minimum, 12%, to naturally occur in this population. We hypothesized that the Illinois high school female wrestlers %BF values would produce similar findings to those from the national population of high school female wrestlers and that the prevalence of wrestlers at or below 12% minimum would be rare and improbable.

Materials and Methods

Study Design

Data from the 2023-24 high school season were retrospectively analyzed from a convenience sample of 2,291 female wrestlers competing for the Illinois High School Athletic Association (IHSA) (NWCA, n.d.). A cross-sectional design was used to evaluate data obtained prior to the start of the competitive season.

Participants

A total of 2,291 high school (age range: 14-18yrs) wrestlers competing for the Illinois High School Athletic Association (IHSA) were included in the analysis. Data was extracted from the weight certification submission system called the Optimal Performance Calculator (OPC) provided by the NWCA (NWCA, n.d.) and deidentified to maintain the privacy and confidentiality of the wrestlers. No identifiers were included with the data, so age was not available. Consequently, IRB approval was not required, and therefore no informed consent was obtained.

Protocol

All Illinois wrestlers are mandated to complete a pre-season weight certification, which involves assessing hydration status (USG <1.020 g/mL) to confirm euhydration, measuring body weight, and %BF using a two-site skinfold method in accordance with NFHS and IHSA regulations. All measurements were taken by IHSA Certified Body Fat Assessors which included athletic trainers or other qualified staff at the local high school (grades 9-12), who were trained by an International Society for the Advancement of Kinanthropometry (ISAK) Level 3 instructor in a live 3-hour course that was given approximately 4 weeks prior to the start of the wrestling season. Skinfolds were taken three times at each site, in rotational order, using either Lange or Slim Guide skinfold calipers and the mean of the 3 values was used to predict %BF. Wrestlers' data were submitted by the IHSA Certified Body Fat Assessor into a weight certification submission system (Optimal Performance Calculator [OPC]) provided by the National Wrestling Coaches Association (NWCA) to compute %BF, MWW and MWC using the Slaughter skinfold prediction equation (Slaughter et al., 1988).

Preseason body weight (identified as current weight), triceps and subscapular skinfold in mm, and estimated %BF values using the Slaughter equation were extracted for analysis and used to calculate the corresponding MWW and MWC based on the existing and proposed %BF thresholds. Current weight represents pre-season weight before the initiation of wrestling specific conditioning and weight management. Calculations for MWW at 12 and 19 %BF were completed using the following equations:

$$12\% MWW = \frac{\left(1 - \frac{\%BF}{100}\right) \text{x Body Mass}}{0.88} \qquad (1)$$

$$19\% MWW = \frac{\left(1 - \frac{\%BF}{100}\right) \text{x Body Mass}}{0.81} \qquad (2)$$

Data Analyses

Normality was assessed using visual inspection of skewness and kurtosis. Frequency statistics and descriptive analysis were performed to compute normative %BF, SSF, and MWW profiles. Analysis of percentiles for %BF at the 5th, 25th, 50th, 75th and 95th was used for descriptive purposes and to compare with other studies.

Based on previous studies (Jagim et al., 2025; Jagim, Tinsley, et al., 2024) the fifth percentile value was used as an alternative threshold for MWW determination. Scatterplots were used to visually represent the distribution of wrestlers by their Minimum Weight Class (MWC) across all 14 weight classes, highlighting the number of athletes with %BF values below both the 5th percentile and the 12%BF threshold.

Differences in current weight and MWC at the 12%BF and 19%BF thresholds as well as the time required to reduce body weight from current weight to the corresponding MWC thresholds utilizing a rate of weight loss equal to 1.5% per week, as recommended by the NWCA (NWCA, n.d.). Female wrestlers weighing ≤100 lbs. or ≥190 lbs. were identified as outliers and excluded from the analysis, resulting in the removal of 290 athletes from the sample. Wrestlers under 100 lbs. were not eligible to pursue further weight loss, while those over 190 lbs., classified within the heavyweight division, were not expected to cut weight to compete in a lower class.

Bar graphs were used to visually display and compare the distribution of wrestlers by their current weight and calculated MWC at 12 and 19%BF. Regression analysis was used to identify average %BF across all weight classes. Data were analyzed with SPSS v. 19.0 (SPSS, IBM Corp., Chicago, IL, USA) and Microsoft Excel (Microsoft® Excel® for Microsoft 365 MSO Version 2502 Build 16.0.18526.20168, 32-bit, 1 Microsoft Way, Redmond, WA 98052, US).

Table 1. Descriptive summary of Illinois high-school female wrestlers for the 2024 season

Variables	X	SD	Range		Percentile				
			Lower	Upper	5	25	50	75	95
%Fat	29.7	8.1	9.5	64.8	18.1	13.9	28.1	34.5	45.2
lb.'s									
FM	43.9	22.0	8.2	196.2					
FFM	97.4	14.8	60.8	187.7					
BM	141.3	32.1	73.0	308.7	102.5	119.1	135.0	155.1	203.1
SSF	37.5	14.0	10.0	101.0	19.0	27.0	35.0	45.5	65.0
Tri	19.5	6.8	5.3	50.7	10.0	14.7	19.0	23.7	32.0
Sub	18.0	8.0	4.0	57.7	8.0	11.7	16.0	22.3	33.1
kg's									
FM	19.9	10.0	3.7	89.0					
FFM	44.2	6.7	27.6	85.1					
BM	64.1	14.6	33.1	140.0	46.5	54.0	61.2	70.4	92.1
SSF	17.0	6.4	4.5	45.8	8.6	12.2	15.9	20.6	29.5
Tri	8.8	3.1	2.4	23.0	4.5	6.7	8.6	10.7	14.5
Sub	8.2	3.6	1.8	26.2	3.6	5.3	7.3	10.1	15.0

Notes: n = 2291, FM: Fat Mass, FFM: Fat-Free Mass, BM: Body Mass, SSF: Sum of Skinfolds, Tri: Triceps Skinfold, Sub: Subscapula
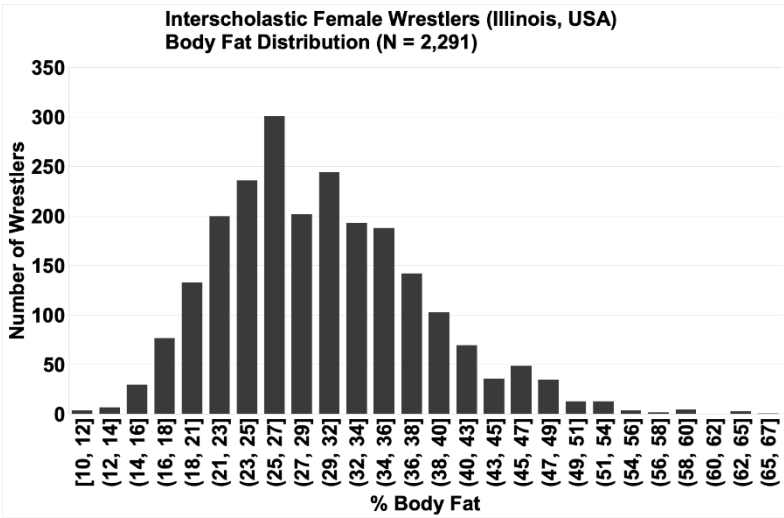

Figure 1. Interscholastic Female Wrestlers (Illinois, USA) Body Fat distribution

Table 2. Body mass comparisons and time to target at 12% and 19% body fat

Variables	X	SD	Range	
			Lower	Upper
Current BM (lb's)	136.2	21.3	100.0	190.0
MWW@12% (lb's)	109.0	13.3	73.0	161.9
MWW@19% (lb's)	118.4	14.4	79.3	175.9
Difference	9.4	19.7	80.9	-61.9
Current BM to MWW@12% (Δ)	27.2	14.2	0.7	87.2
Current BM to MWW@19% (Δ)	17.7	14.1	-8.70	78.7
Difference	-9.4	3.7	-33.0	21.1
Weeks to MWC@12%	10.9	5.5	0.0	30.8
Weeks to MWC@19%	6.7	5.8	-6.8	27.2
Difference	-4.2	2.2	-15.3	10.9

Notes: n = 2002, BM: Body Mass, MWW: Minimum Wrestling Weight, Weeks to MWC: Minimum Wight Class, Weight Cutting Limit of 1.5% BM Per Week.

Results

Descriptive characteristics of 2291 female wrestlers are displayed in Table 1. Figure 1 displays a positively skewed (0.82) and platykurtic (0.97) distribution of all 2291 female wrestlers relative to %BF.

Table 2 displays Current body mass (BM), MWW at both 12 and 19%BF, the amount of weight loss needed to reach 12 and 19%BF from preseason weight certification, and the number of weeks needed to reach. Figure 2 presents a scatterplot of %BF relative to wrestling weight class with Figure 3 denoting wrestlers below 19%BF across all weight classes. At the time of preseason weight certification, only four wrestlers, representing 0.17% of the sample, had body fat percentages below 12%.
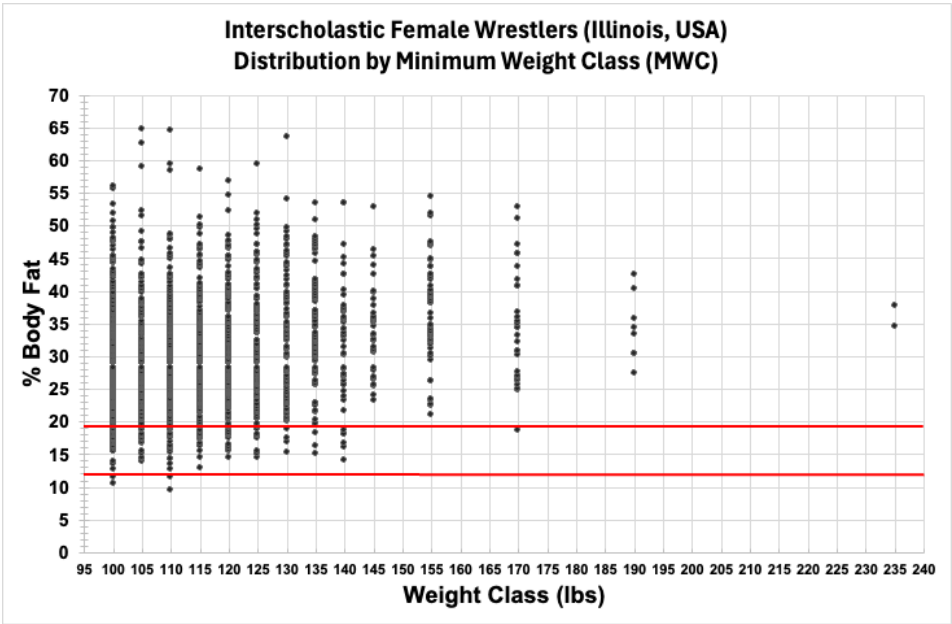

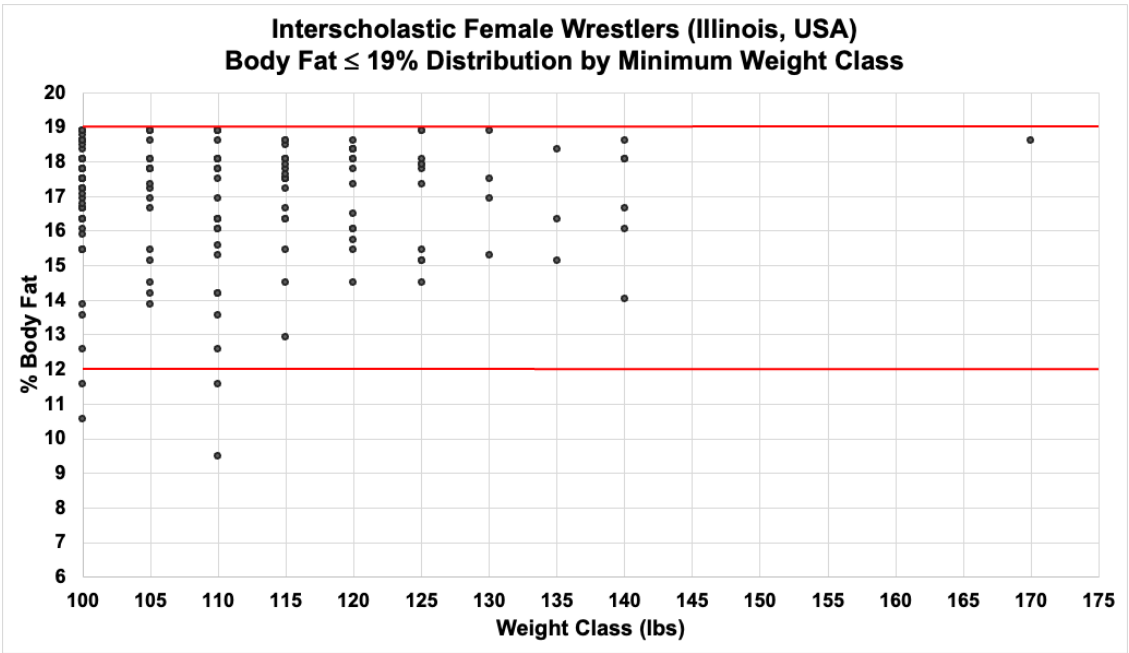**Figure 2.** Interscholastic Female Wrestlers (Illinois, USA) distribution by minimum weight class

Figure 3. Interscholastic Female Wrestlers (Illinois, USA) body fat ≤ 19% distribution by minimum weight class

Figures 4, 5, and 6 illustrate the distribution of 2,002 female wrestlers across all weight classes at their current body weight, as well as at projected weights corresponding to 12%BF and 19%BF. The relationship between average body fat across all weight classes can be seen in Figure 4, indicating a significant ($p < 0.001$) positive relationship ($r = 0.84$) between %BF and weight class.

Discussion

Illustrated in Figure 1, body fat distribution among female wrestlers in Illinois, reveals a positively skewed (0.97), platykurtic (0.82) pattern. This skewness is expected, as %BF has a natural lower limit but can exhibit extremely high values. Table one shows mean %BF of the female wrestlers from the 2023-2024 pre-season as 29.7% +/-8.1 with a sum of skinfolds of 37.5 +/-14.0 as well as FFM and FM (97.4 +/-14.8, 43.9 +/- 22.0), respectively. A recent investigation of a similar population (U.S. interscholastic high school female wrestlers, n = 14,744) reported %BF (using the same method) less than 0.5 %BF of the current investigation (Jagim et al., 2025).
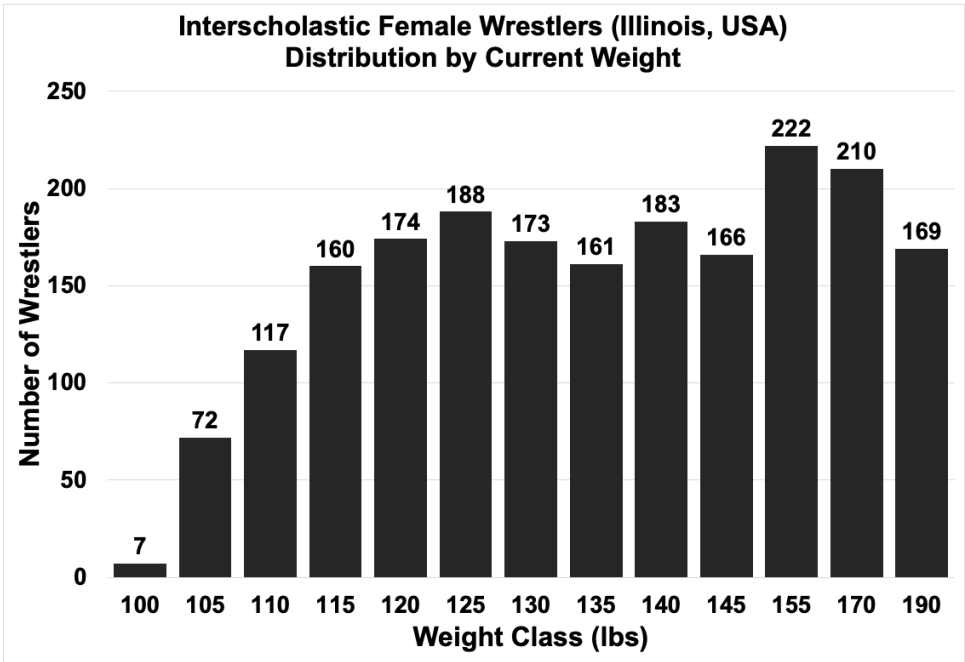

Figure 4. Interscholastic Female Wrestlers (Illinois, USA) distribution by current weight.
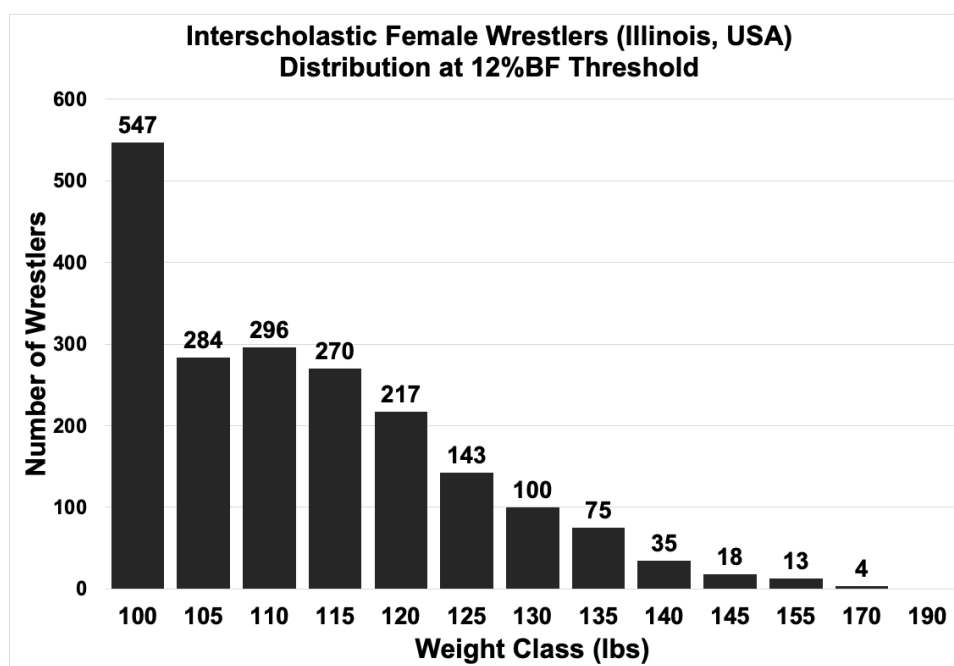
Figure 5. Interscholastic Female Wrestlers (Illinois, USA) distribution at 12 Body fat Threshold.
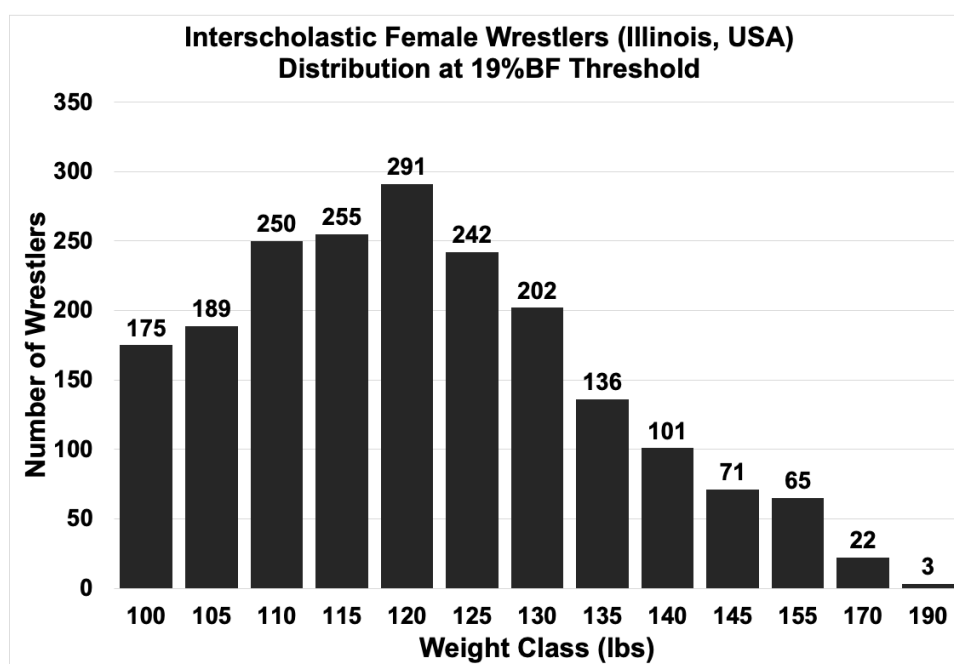

Figure 6. Interscholastic Female Wrestlers (Illinois, USA) distribution at 19% Body Fat Threshold.

Comparable percentile values were also observed between the current and previous investigation (5th percentile: 18.9% vs. 18.1%; 25th percentile: 23.9% vs. 23.9%; 50th percentile: 28.3% vs. 28.1%; 75th percentile: 33.7% vs. 34.5%; 95th percentile: 44.0% vs. 45.2% (Jagim et al., 2025). These results support our hypothesis that Illinois high school female wrestlers %BF values would produce similar findings to those from the national population of high school female wrestlers.

Of the 2,291 female wrestlers analyzed in the study, only 4 of the wrestlers were at or below 12% body fat, which represents 0.17% of the total wrestlers (Fig 2). Thus, in further support of our hypothesis, the current 12%BF threshold was rare and improbable in Illinois high school female wrestlers. Using a conservative approach and rounding up to the next whole number from 18.1%BF, 19%BF was identified as the proposed threshold for an alternative %BF (Figure 2). Using scatterplots to visually display the distribution of all the individual female wresters at each weight class for MWW determination, Figures 2 and 3 showcase the number of individuals who are allowed to cut to lower weight classes comparing 12 and 19%BF. In additional support of the current hypothesis Jigem et al. (Jagim et al., 2025) proposed using the fifth percentile as a potential alternative threshold for MWW and MWC

designation which would raise the %BF threshold from 12% to 19%. Moreover, there remains limited data supporting the safety of the current 12%BF minimum in female wrestling, particularly adolescent competitors who may be undergoing long term, repeated weight loss, even during periods of growth and maturation. In a review of %BF values of female wrestlers the authors suggest that even among highly trained, elite female wrestlers with %BF typically ranging between 18% and 22%, it is exceedingly rare for female wrestlers to approach the 12% threshold (Horswill & Roedeshimer, 2022). When this does occur, it appears to be almost exclusively in preadolescents (Arakawa et al., 2020).
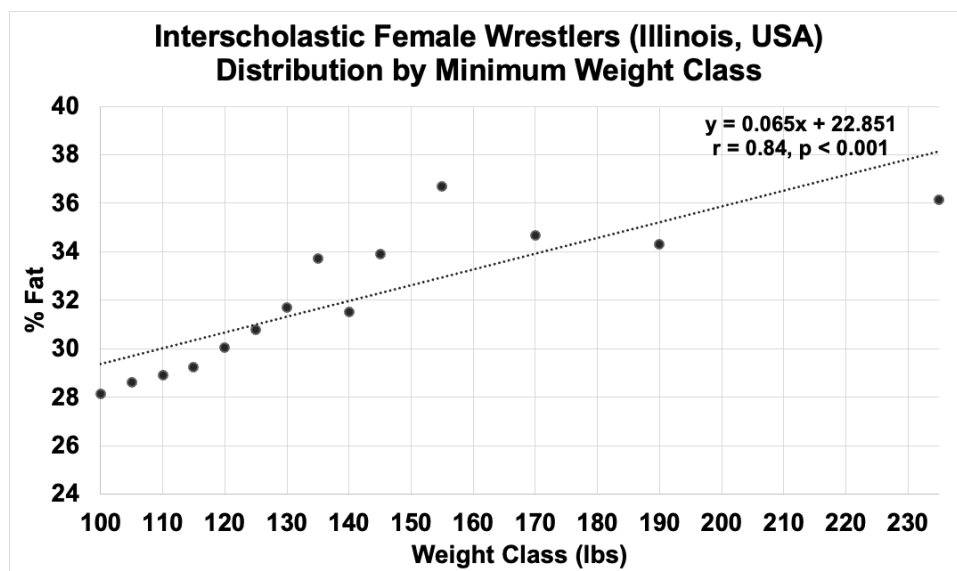

Figure 7. Interscholastic Female Wrestlers (Illinois, USA) distribution by minimum weight class.

Table 2 presents the average weight difference between wrestlers' current weight and their MWW and the estimated time required to reach their MWC under the existing 12%BF threshold and the proposed 19%BF threshold. The later calculation was based on NFHS guidelines, which restrict weight loss to a maximum of 1.5% of the wrestlers' body weight per week. Under the current 12%BF standard for MWW determination in female wrestling, wrestlers were, on average, 27.2 ± 14.2 lbs. above their eligible MWC at the time of weight certification. With the proposed 19%BF threshold, this difference decreased to 17.7 ± 14.1 lbs., representing a more moderate and potentially safer weight loss requirement. When applying these weight differences within the NFHS 1.5% maximum weekly weight loss regulation, wrestlers would need an average of nearly 11 weeks (10.9) to reach their MWC under the current 12%BF threshold. Given that the IHSA wrestling regular season spans 12 weeks, with an additional 3 weeks for postseason competition (regionals, sectionals, and state qualification), this weight reduction period could extend nearly the entire competitive season. In contrast, under the proposed 19%BF threshold, the average time required to reach MWC would be reduced to 6.7 weeks, allowing for adequate duration for wrestlers to establish a stable weight for competition and adhere to the body weight descent plan. We recognize that the athletes in this study were assessed during the pre-season, and the fifth-percentile cutoff was derived from individuals who may not have attempted to reach their lowest %BF potential through weight reduction. However, the primary concern extends beyond an absolute %BF. Importantly, extremely low body fat percentage (%BF) does not appear to be the sole contributor to adverse health outcomes such as hormonal disturbances, reductions in bone mineral density, or other negative physiological effects (Brown et al., 2017). Instead, prolonged periods in a low-energy state have shown to be a more significant driver of these negative outcomes (Loucks, 2012).

As female wrestling continues to experience rapid growth in the United States, the rationale behind the 12%BF remains unclear. This threshold, intended as a minimum, may inadvertently be perceived as an ideal or universally attainable standard, regardless of whether it is safe or appropriate for every athlete. Additionally, the pressure to fill weight classes can lead to pressure from coaches or teammates, especially when body composition assessments suggest an athlete can compete at 12% body fat. In such cases, this standard may push some athletes toward an unhealthy minimum weight. Research on the health implications of repetitive weight cycling and competing at low body fat levels, in female wrestlers remains limited. These concerns are particularly relevant at the high school level, where many athletes are still undergoing puberty, developing peak bone mass, and may not yet have reached menarche (Jagim, Moschelli, et al., 2024).

To further illustrate the impact of raising the %BF threshold, we analyzed the distribution of wrestlers by their current weight and calculated MWC at 12 and 19%BF, at the time of weight certification (Figure 7). The

distribution of wrestlers at current weight is negatively skewed, with 52% of athletes falling within the first nine weight classes. Notably, seven girls were at the 100-pound weight class, representing just 0.35% of the overall female wrestler population. The distribution of wrestlers at the 12%BF threshold is positively skewed with 56% of athletes falling within the first 3 weight classes. Notably, 547 girls fall within the 100-pound weight class, representing 27% of the overall female wrestler population. When applying the proposed 19%BF threshold the distribution illustrates a more normal distribution with 58% of the athletes falling within the first 5 weight classes. Notably, 175 girls fall within the 100-pound weight class representing a more conservative 8.1% of the overall female wrestler population. Using the proposed 19%BF threshold would increase the number of wrestlers ineligible to compete in lower-weight class divisions which may alleviate the pressure to cut excessive weight and reduce the associated health risks of competing in extremely low-weight divisions. Importantly, females with less than 19% body fat at the time of weight class determination would not be disqualified from competing at their relative weight class but would be prohibited from reducing weight further to achieve a lower weight class.

Regression analysis was conducted to visually examine the relationship between mean %BF and MWC across the 14 weight classes. Results revealed a significant positive linear trend, indicating that body fat percentage increases as MWC increases. The strong correlation ($r = 0.84$) suggests a clear relationship between MWC and %BF. In agreement, the relationship between body mass and %BF has been reported for female combat sport athletes (Reale et al., 2020). One investigation (Oppliger et al., 1996) suggested utilizing a graded minimum %BF threshold approach based on weight class, which warrants further investigation. Theoretically, this would set a lower minimum %BF threshold for the lightest weight classes and progressively higher minimums for heavier classes, potentially creating a more tailored and equitable approach to weight class minimum %BF thresholds.

Additional concerns arise from relying on %BF estimates derived from the Slaughter skinfold prediction equation, which was recently found to underestimate fat-free mass (FFM) in female athletes, leading to an overestimation of %BF (Jagim et al., 2023; Jagim, Tinsley, et al., 2024). Moreover, this equation has yet to be cross-validated for female wrestlers, particularly those competing at the high school level and including Hispanic female wrestlers (Horswill & Roedeshimer, 2022). A further limitation of the Slaughter equation is its reliance solely on upper-body skinfold sites. The patterning of subcutaneous adipose tissue is known to exhibit very large variations between individuals (Mueller & Stallones, 1981; Müller et al., 2016). To assess the value of various sites as predictors of subcutaneous adiposity, correlations between the caliper and incision thickness with the dissected subcutaneous adipose tissue mass have been determined (Clarys et al., 1987). Notably, five of the six best skinfold sites used as predictors were located on the lower limbs, suggesting that a more comprehensive approach, incorporating measurement sites from all key fat storage areas, particularly the legs, may be more effective. These findings underscore the limitations of using a single prediction equation that does not account for key factors such as age, maturation level, ethnicity, and adipose tissue patterning, all of which influence the relationship between skinfold measurements and %BF.

Conclusion

In summary, the analysis of body fat distribution among Illinois high school female wrestlers supports the need for SGB to reassess the current 12%BF minimum threshold for MWC determination. The 12%BF threshold for female wrestlers is not only rarely achieved, observed in just 0.17% of the study population, but may also be unrealistic and potentially harmful, particularly for adolescent athletes still undergoing growth and development? Raising the minimum threshold from 12 to 19%BF would impact a small percentage of wrestlers, could reduce the prevalence of extreme weight-cutting practices, lower associated health risks, and enable athletes to achieve competition weights within a reasonable timeframe. Additionally, this adjustment would promote a more balanced distribution across weight classes and help alleviate pressure to compete at dangerously low weights.

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Informed Consent Statement

All the athletes included in the study provided written informed consent.

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