HAWAII WRESTLING WEIGHT MONITORING PROGRAM

RULES AND REFERENCE GUIDE

Hawaii Interscholastic Athletic Directors Association

and

Hawaii High School Athletic Association

Amended September 2019

Yellow Highlights- Changes made 2017-18
Blue Highlights- Changes for 2018-19

Prepared by

Hawaii Athletic Trainers' Association
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September 2019

HAWAII WRESTLING WEIGHT MONITORING RULES

I. PROGRAM FUNCTION: The program is designed to assist wrestlers in avoiding potentially harmful, rapid weight reduction practices utilized by wrestlers to achieve participation in a specific weight class. The rules are to comply with the NFHS Wrestling Rule 1 Competition, Section 3 Weight-Control Program.

II. WRESTLING WEIGHT CONTROL PROGRAM

A. Once the testing cycle has begun, no changes in the Weight Monitoring Program rules or procedures will be permitted until the state championships are completed.

B. No wrestler may compete, pre-season or in-season, until he/she has successfully completed the required hydration test and body fat assessment.

C. Wrestling weight monitoring program definitions

a. Base Weight – The actual body weight of a wrestler at his/her first successful weight monitoring session.

b. Lowest Allowable Weight – The lowest weight a wrestler is eligible to reach during the season based on the body fat test.

c. Low Weight Class – The lowest weight class a wrestler is eligible for based on the body fat test and the wrestler's individual Weight Descent Plan.

d. Eligible Low-Weight Class – The weight class, and the next higher weight class, for which a wrestler is eligible to wrestle that week based on the wrestler's individual weight descent plan that week.

e. Certified Low-Weight Class – The low weight class for which a wrestler has weighed in at the weight or below that weight, and is eligible based on his/her body fat test and his/her individual weight descent plan.

f. Body Fat Test – The measurement of the body fat percentage of the overall body mass. Each wrestler will be measured for his/her body fat percentage according to established protocols utilizing skin-fold calipers.

g. Weight Descent Plan – An individual wrestler's season long plan for weight loss. The amount of weight loss per week is an average of 1.5% of wrestler's base weight. The weight descent plan only establishes two weight classes for which the wrestler may compete in during any particular week.

h. Weigh In Report Form – The form downloaded from the Hawaii Wrestling Management system (HWMS) that must be brought to each weigh-in.

i. Hydration Test – The measurement of a wrestler's hydration level by testing the specific gravity of the wrestler's urine.

D. Establishing Lowest Allowable Weight

a. Body Fat Testing: Each league will provide a minimum of two opportunities for hydration and body fat testing. Individual leagues shall determine their test dates due to the peculiarities of each league. However, the initial test for all leagues may not be provided prior to September 1st. Each wrestler will have a maximum of three testing opportunities. All tests must be completed prior to the fifth Saturday prior to the State Tournament, unless a wrestler falls into one of the exemptions listed below. Coaches, or chaperones that have been designated in writing by the school's athletic director at least 24 hours prior to any hydration and body fat testing, shall escort all wrestlers to the testing site and check in with the appropriate league-designated testing site administrator. The designation of a

chaperone shall be sent to the league and league-designated site coordinator at least 24 hours prior to the testing.

b. Results of measurements should be distributed to the coaches by the day after the test and sent to the HHSAA Office, or designee, within seven (7) days of the test date.

c. Results of the measurement should be available on the Hawaii Wrestling Management System (HWMS) website within 72 hours of the completion, submission, and validation by HHSAA of the body fat testing results.

d. Unusual situations must be arranged with the HHSAA in writing before deadline or due dates.

e. No wrestler may compete until the wrestler's lowest allowable weight is determined.

f. The lowest allowable weight for a male wrestler cannot be a weight in which his body fat is less than 7%, unless a wrestler falls into one of the exemptions listed below. The lowest allowable weight for a female wrestler cannot be a weight in which her body fat is less than 12%, unless a wrestler falls into one of the exemptions listed below.

g. During the body-fat testing, wrestlers will be allowed a 1 pound error variance when determining the low-weight class (e.g. if a male wrestler's body-fat test indicates a low-weight of 115.0 pounds, he will be able to meet the low-weight class of 114 pounds).

h. Wrestlers below Minimum Body Fat Percentage

1. Any male wrestler whose body fat percentage at the time of measurement is below 7% must obtain before competing, in writing, a licensed physician's (MD or DO) clearance (Appendix J) stating that the athlete is naturally at this sub-7% body fat level.
2. Any female wrestler whose body fat percentage at the time of measurement is below 12% must obtain before competing, in writing, a licensed physician's (MD or DO) clearance (Appendix J) stating that the athlete is naturally at this sub-12% body fat level.
3. A physician's clearance is for one season and expires April 1 of each year. The wrestler must use the HHSAA physician clearance form (Appendix J) when submitting this information.
4. A Parental permission form may not be used to affect the determination of lowest allowable weight.

E. Testing Protocols

a. All wrestlers must pass the Hydration Test prior to being allowed to proceed to the Body Fat test. In order to pass the hydration test a wrestler specific gravity assessment of his or her urine must be greater than 1.000 and equal to or lower than 1.025 grams per milliliter. An over-hydration failure (equal to or lower than 1.000 grams per milliliter) shall not count against the individual. Any individual(s) identified as attempting to cheat and/or manipulate the results of the hydration test will be immediately disqualified from that test. The incident will be documented on the back of the result card and reported to the league-designated testing site administrator, coach(s) of the individual(s), respective school athletic director, respective league coordinator, respective league executive secretary, and HHSAA office. Individual(s) shall be suspended for the duration of the season.

b. Upon passing the hydration test the wrestlers will be weighed to the nearest tenth of a pound.

c. After weighing-in wrestlers will be proceed to the body fat test. The body fat test will be conducted by certified athletic trainers educated in the use of skin fold calipers. Each wrestler will be analyzed three times by three different assessors. Males will be analyzed at the triceps, the subscapula and the abdominals. Females will be analyzed at the triceps, the abdominals, the suprailiac, and the thigh. Any individual who does not complete the skin fold caliper measurement will have his/her results recorded as 0 for each measurement. However, the individual being disqualified will have an opportunity to re-test so long as the disqualification did not take place during the last scheduled session for the duration of the season.

d. The Bod Pod shall not be used as a measurement tool for determining percent body fat for HHSAA wrestling (June, 2005).

F. Establishing Certified Low-Weight Class

a. Certified low-weight classes are determined by:

1. The league weight monitoring sessions (hydration and body fat testing sessions) to establish the lowest allowable weight;
2. The weight descent plan; and
3. The wrestler weighing in at weight at or below a given weight class at an official scheduled league competition or weight monitoring session, or HHSAA sanctioned pre-season competition at which the individual's weight descent plan allows him/her to weigh-in. The certified low-weight class must be equal to or above the lowest allowable weight as established by body fat testing and the individual's weight descent plan.

b. No wrestler may compete below his or her certified low-weight class.

c. The 2-pound weight allowance will be given on the first Sunday of January.

d. Once the certified low-weight class has been established, the two eligible weight classes will be the certified low-weight class and the next highest weight class. However, if an individual weigh-ins over the higher of the two eligible weight classes, the recertified weight class of that individual will be the weight class for which he/she qualified by that weigh-in. The recertified low-weight class will establish his/her eligible weight class from that date forward to the State Tournament.

e. A wrestler will be able to freeze his/her individual weight descent plan once the HHSAA descent plan freeze guidelines are followed and all paperwork has been received, verified and approved by the HHSAA State Wrestling Weight Monitoring Coordinator. The HHSAA State Wrestling Weight Monitoring Coordinator will inform the league coordinator once the wrestler's descent plan has been approved and what the wrestler's lowest eligible weight class is. **Once a wrestlers' descent plan has been frozen it cannot be unfrozen.**

1. The HHSAA Wrestler Descent Freeze Plan form must be submitted to the HHSAA State Wrestling Weight Monitoring Coordinator by the League Wrestling Coordinator. The HHSAA Descent Freeze Plan Form (APPENDIX L) must be completed, including all required signatures and turned in to their League Wrestling Coordinator
2. The League Wrestling Coordinator will email the completed form to the HHSAA State Wrestling Weight Monitoring Coordinator. (edpaola@ksbe.edu)
3. The date of weight descent freeze will be the date that it is received, verified and approved by the HHSAA State Wrestling Weight Monitoring Coordinator. The HHSAA State Coordinator will inform the League coordinator of the approved weight class. The League Coordinator will inform the coach of the wrestler.
4. When a wrestler's weight class is frozen, they will not be allowed to obtain a lower weight class (regardless of the 2 lb allowance).

G. Functions of the Weight Descent Plan

a. The weight descent plan only establishes the two weight classes for which the wrestler may compete in during any particular week.

b. The weight descent plan does not preclude a wrestler from competing if he/she loses more than 1.5% of the wrestler's body weight in a given week, providing, the wrestler does not lose weight beyond that of the eligible low-weight class. He/she can compete at that eligible low-weight class and the next higher weight class.

c. If a wrestler loses weight beyond the eligible low-weight classes, he/she can only wrestle at the next highest weight class (e.g. according to a wrestler's weight descent plan, the two eligible weight classes are 125 and 130 pounds. The wrestler weighs in at or below 120.0 pounds, and higher than 114.0, he would be eligible for only the 125-pound weight class).

d. If a wrestler weighs in above the top of the higher of the two eligible weight classes according to his/her descent plan, that wrestler's weight descent plan will be recalculated by the Hawaii Wrestling Management System (HWMS). (Revised 10/2017)

e. No wrestler may compete below his or her eligible low-weight class, which may change from week to week based on the weight descent plan. If a wrestler weighs in more than one weight class below his or her lowest eligible weight class, that weigh-in would be voided and the wrestler ineligible to compete for that competition date.

H. Weigh-In Report Form Rules

a. Each coach is required to have his/her team's Weigh-In Report Form (Appendix N) at each match for the opponent's coach to inspect. Coaches shall be held responsible to ensure the proper participation of team individuals in eligible weight classes, and violations shall result in suspension as outlined in Section M. Disciplinary Actions. Incidents shall be reported to the respective school athletic director, league coordinator, executive secretary, and HHSAA office.

b. Input of all weigh in data into the Hawaii Wrestling Management System (HWMS) shall be managed by the league coordinators for their respective leagues. Input of actual weigh-in data for all league and pre-season events shall be completed no later than the Tuesday following each competition. No Weigh-

In Report Forms shall be created prior to noon Wednesday for any events that following Thursday, Friday and/or Saturday.
Special circumstances for mid-week competition shall be coordinated between the respective league coordinator and the state coordinator. However, all prior weekend competition shall be input to the Hawaii Wrestling Management System (HWMS) web site prior to the creation of Weigh-In Report Forms.

c. Untimely input to the Hawaii Wrestling Management System (HWMS) web site may result in ineligible participation. In the event of ineligible participation, the wrestler shall forfeit all matches competed while ineligible. Furthermore, any team scoring impacted by such forfeits shall be adjusted accordingly. The Head Coach of the ineligible wrestler shall be suspended as outlined in Section M. Disciplinary Actions.

I. Out of State Transfers

a. Wrestlers who transfer to Hawaii from out of state during the season and have certified at their previous state will use the previous state's certification.

b. Wrestlers who transfer to Hawaii from out of state during the season without a low-weight class certification and arrive prior to January 1 must certify by the fifth Saturday prior to the State Tournament.
(Reminder, no wrestler may compete, pre-season or in-season, until he/she has completed the required hydration and body fat assessment).

c. Wrestlers who transfer to Hawaii from out of state during the season without a low-weight class certification after January 1 must certify at least one week prior to the league championship tournament (Reminder, no wrestler may compete, pre-season or in-season, until he/she has completed the required hydration and body fat assessment). Leagues may set up special weight monitoring sessions for late transfer students. Late transfer students shall have only one opportunity to establish their certified low-weight class after January 1st.

J. Retesting Procedures

a. One retest will be allowed for wrestlers who establish a minimum weight that is within 1 pound over their minimum weight class. Testing will occur with each league's hydration testing period. Example: A wrestler passes hydration and establishes a minimum weight of 108.4. They will be allowed to retest 1 more time because they are within the 1 lb. of the 108 weight class as opposed to being forced to wrestle up at the 114 lb. weight class. Other than the foregoing, no wrestler may retest his/her initial successful body fat testing results.

b. If a wrestler fails his/her hydration test, he/she will be allowed to retest on another date. However, a wrestler failing his/her third attempt based on under-hydration (greater than 1.025 grams per milliliter) will not be allowed any additional retests.

K. Weight Monitoring Data Plan

a. The HHSAA will utilize Hawaii Wrestling Management System (HWMS) web site as the mechanism to calculate the weight descent plan for each wrestler and as the data reporting and retrieval tool for all member schools.

b. The Hawaii Wrestling Management System (HWMS) can be accessed from www.sportshigh.com or directly by accessing www.hiwrestlingmanagementsystem.com
Click "Login". Enter Login ID and password for coach.

c. Coaches will be able to print their Weigh-in Report Form from the Hawaii Wrestling Management System (HWMS) website.

L. Disciplinary Actions

a. Any individual(s) identified as attempting to cheat and/or manipulate the results of the hydration test will be immediately disqualified from that test. The incident will be documented by the athletic trainer(s) that witnessed the activity on the back of the result card and reported to the league-designated testing site administrator, coach(s) of the individual(s), respective athletic director, respective league coordinator, respective league executive secretary, and HHSAA office.

b. Coaches shall be held responsible to ensure the proper participation of team individuals in eligible weight classes. Incidents shall be reported to the respective school athletic director, league coordinator, executive secretary, and HHSAA office.

c. Individual(s) and coach(s) shall be suspended for the duration of the season for incidents of cheating and/or manipulation of hydration test results. Coach(s) shall be suspended as determined by the respective league, for the participation of ineligible individual(s) in any competition. Each league, through its own internal processes, will review and, as appropriate, affirm the suspension. Individual(s) or coach(s) may appeal the decision of the league to the HHSAA Executive Board through appropriate processes defined by HHSAA. Individual(s) or coach(s) shall not participate while the appeal process in ongoing.

APPENDIX A

HHSAA WRESTLING WEIGHT MONITORING PROGRAM GUIDE

LEAGUE RESPONSIBILITIES FOR THE MEASUREMENT PROCESS

A. It is the leagues responsibility to coordinate dates and personnel for skin-fold assessment.
B. The league executive director or appointee will designate the site director.
C. The league will provide the materials to conduct the urine specific gravity test.
   (1) Refractometer
   (2) Collection cups
   (3) Plastic stir straws
   (4) Distilled water
   (5) Latex gloves
   (6) Gauze
D. The league will provide the materials to conduct the skin-fold assessment.
   (1) Lange or Harpenden Skin-fold Calipers
E. The league must have available at the time of the measurement:
   (1) A certified scale (certified after the start of school in the fall and before October 31)
   (2) Skin-fold data forms
   (3) Two league referees or designated personnel (coach, teacher, etc.) who will:
      (a) Assist with obtaining the weight of each wrestler.
      (b) Assist with the recording of data.

II. MATERIAL COSTS (Approximate Cost)

A.	Refractometer	$350
B.	Skin-fold Calipers	
(1)	Lange Skin-fold Calipers	$217.95
(2)	Harpenden Skin-fold Calipers	$220.00

III. PROGRAM IMPLEMENTATION PROCEDURES

A. Body Composition Testing Goals and Procedures:
   (1) Site Director - (Unbiased party)
      (a) Responsible for obtaining and organizing all materials needed for testing.
      (b) Obtaining, organizing and assigning all testers for the testing.
      (c) Resolve any problems which arise during the test.
   (2) Materials required for testing protocols (Quantity may vary depending on site requirements)
      (a) Registration forms (HHSAA Data form)
      (b) Refractometer
      (c) Plastic stir straws
      (d) Latex gloves
      (e) Distilled water
      (f) Cups - plastic 3 oz
      (g) Colored dye toilet cleaner
      (h) Skin-fold Calipers
      (i) Clipboards
      (j) Pens

(k) Scales - Digital

B. Testing Protocols – No coaches, parents, or other unauthorized personnel shall be allowed in any of the testing areas from the commencement of the session until completion.

(1) Registration Station
- (a) List of all athletes to be tested is requested two weeks in advance.
- (b) Registration forms should be prepared prior to test date.
- (c) Athletes will be allowed to register on the day of the test.
- (d) Computer data should be prepared prior to the test date.

(2) Station #1 - Specific Gravity - Estimated time to complete test - 5 Minutes (There is no time limit to complete the test if athlete is having difficulty producing specimen) - Bath Room or Locker Room

Limit the amount of athletes in the specific gravity area to the amount of assessors in the room.

The toilets should have a colored dye placed in each toilet before testing is started.
- (a) One to two ATCs
- (b) Follow OSHA Standards
- (c) All student-athletes must be wearing an undergarment (i.e. shorts and t-shirt) before proceeding to the toilet. Wrestlers will be asked to remove anything in their pockets if shorts have pockets.
- (d) Student-athlete gives data form to ATC and identifies themselves to the ATC.
- (e) ATC gives the athlete a cup.
- (f) Student collects urine sample and empties bladder. The student-athlete should be instructed NOT to flush the toilet. Note that the doors to stalls shall be left open and/or male students shall use available urinals.
- (g) Sample is placed on the refractometer using the plastic stir straw.
- (h) ATC reads refractometer. Specific gravity must be equal to or greater than 1.002 g/ml and equal to or below l.025 g/ml.
- (i) Student must empty and discard plastic cup.
- (j) If a pass is recorded, the data form is given to student-athlete and proceeds to Station #2.
- (k) All data must be entered in black or blue ink. All mistakes must be double initialed.
- (l) If a fail is recorded, the data form is retained by the ATC and the student-athlete is sent to Station #4

(2) Station #2 - Weight Station - Estimated time to complete test - 3 minutes
- (a) Two league officials, coaches, ATC - A male and female required as determined by league.
- (b) Student-athlete gives data form to ATC or coach
- (c) Undergarment weight is taken and recorded on individual's data form.
- (d) All data must be entered in black or blue ink. All mistakes must be double initialed.
- (e) Student-athlete goes to Station #3.

(3) Station #3 - Skin-fold measurements -Estimated time to complete test - 10 minutes See Appendix D for exact protocol
- (a) A minimum of 3 ATCs - Optimal is 12 trained ATCs.
- (b) One recorder for each ATC- may be students or coaches.

(c) One ATC to mark skin-fold sites on each wrestler.
(d) ATC (A) will take 3 rotating skin-fold readings at 3 sites. Recorder enters data on form.
(e) ATC (B) will take 3 rotating skin-fold readings at 3 sites. Recorder enters data on form.
(f) ATC (C) will take 3 rotating skin-fold readings at 3 sites. Recorder enters data on form.
(g) All data must be entered in black or blue ink. All mistakes must be double initialed.
(h) Data form collected at this station and sent to Data Analysis
(i) Student-athlete moves to Station #4.

(4) Station #4 -Holding Area
Student-athlete reports to the holding area when testing is completed to await departure.

(5) Data Analysis - Computer Room
(a) Minimum of One computer and printer - 1 computer literate person in charge.
(b) Data forms collected from Station #3.
(c) Preliminary information is prerecorded in the computer.
(d) Data input into computer.
(e) Results saved and reports (team and individual) printed out the same day if possible.
(f) Data will be uploaded to Hawaii Wrestling Management System (HWMS) website.
(g) Hardcopies given to HHSAA, League, Coach and School's ATC.
(h) Printout of results for entire team is given to HHSAA, League, Coach and School's ATC, including failed results.
(i) Print outs of all results will be distributed to all schools.

(6) If the student-athlete fails the specific gravity test, instructions for retest will be included with report and the student-athlete will be instructed to review the handbook. Specific date for retest must be established by each league.

(7) If the student-athlete or coach wishes to appeal the results, they must follow the procedures as noted in the handbook.

IV. TRAINING THE SKINFOLD ASSESSOR

A. Training the Assessor

(1) Persons eligible to be trained as HHSAA approved assessors include Physicians (MD or DO), certified athletic trainer, registered nurses, licensed practical nurses, physical therapist, physician's assistant, nutritionist, health educator or an exercise physiologist.

(2) To be eligible to become an HHSAA approved skin-fold assessor, an individual must have demonstrated training and experience in skin-fold measurement.

(3) The assessor will participate in an initial training session and annual update education. The assessor will provide his/her own measuring device which meets the standard required by the HHSAA wrestling minimum weight program.

(4) The assessor training will consist of both classroom education and practical training.

(5) Training sessions will be conducted in conjunction with the Hawaii Athletic Trainer's Association and the University of Hawaii Department of Kinesiology under guidelines provided by HHSAA.

B. Recertification
   (1) Recertification will require a minimum of one-hour training.
   (2) Recertification training will be conducted in several locations throughout the state annually.
   (3) Trainers and assessor trainers will conduct all recertification training programs.

C. Data Collection
   (1) The HHSAA will provide the forms for each school.
   (2) The assessor will conduct all body fat measurements.
   (3) The league will provide the supplies to conduct the specific gravity test.
   (4) The site director will be responsible for submitting the measurement results to the HHSAA within one working day after the testing date.

APPENDIX B

A. HYDRATION REQUIREMENT

Specific gravity assessment of the urine will determine whether a candidate may participate in the skin-fold measurement process on any date. If the wrestler has a specific gravity above the predetermined level, they may NOT be assessed for body composition. A specific gravity level of 1.000 g/ml or less, and/or greater than l.025 g/ml will result in failure.

Monitoring this process is a part of the Assessor's responsibility. Make certain that each wrestler is tested individually to prevent urine exchange (this is an area where the right to privacy must be respected). The wrestler must fill the cup with urine. A drop of urine will be placed on the refractometer to determine the specific gravity for the specimen. If the wrestler passes the specific gravity test he may continue for the body composition assessment. If the wrestler fails the specific gravity test he/she must wait for the next scheduled testing date.

B. BODY COMPOSITION

The human body can be represented as composed of at least two components.

1. Lean Body Mass (LBM) = the muscle and bone mass predicted to be in the body.

2. Body Fat (BF) = essential and non-essential fat storage that is predicted to be in the body. To some, this is an over simplification. The actual composition of an individual's body is probably not truly known, nor can it actually be determined. All current methods of assessing body composition are indirect methods or predictions of the actual values. While underwater (hydrostatic) weighing has long been considered the "GOLD STANDARD" (the method to which all other methods of body composition determination have been related) it too has been critically reviewed as having the possibility for error. Population specificity, maturation, and sub-component validity have all been cited as having potential negative impact on hydrostatic body composition assessment. Current technology and its improvement will continue to lead researchers to develop new methods and refine those which currently exist. This will require that those of us assessing body composition through various field techniques must continue to update our knowledge and remain current relative to adjustments in assessment procedures.

C. PREDICTION OF BODY COMPOSITION

There are a number of field techniques available to attempt to assess body composition. Following is a brief description of some common techniques.

1. Bioelectric Impedance analysis (BIA). A fairly modern technique, still in the developmental stage. It utilizes electrode attachment to the extremities and a small (safe) electrical current to determine the conductivity of lean tissue verses fat tissue. It is programmed to calculate lean body mass and percent body fat. The instrument costs about $3000 to $6000, is subject to hydration level of each subject.

2. Skeletal Anthropometic Widths (SAW). This method was developed by Tipton et al. specifically for the wrestling population in Iowa. It utilizes diameter assessment with two types of anthropometric calipers on the chest, hip, and ankle joint areas along with height and weight. A prediction equation includes these various measurements to calculate minimal wrestling weight.

3. Near Infra-Red technology (NIR): This is a method that was developed to determine the legal fat content of packaged meats for human consumption. It utilizes the theory of the passage of light waves through lean muscle tissue verses fat tissue. The cost of the units ranges from $1000 to $2000 and purport rapid and non-invasive assessment. Ultrasound technology has also been used in a similar manner to determine fat deposition.

4. Computed Tomography (CT): This is an example of new technology being adapted to the study of body composition. It was developed for the detection of normal verses pathological internal body components. Although few CT scan units are used strictly for determination of body composition, it may be the most valid potential assessment device currently available. As such it may define a new "GOLD STANDARD" for body composition assessment.

5. Hydrostatic Weighing (HSW). This is an ancient method (Archimedes' principle) adapted to the body composition assessment problem in recent times. It involves the submersion of an individual to determine the subject's under water weight which is used along with the weight on land to calculate the body density. It utilizes the concept that muscle mass and fat mass have specific know densities relative to water. The assessment of residual volume of the lungs is an important feature of this assessment. The availability of a proper space and equipment is a problem with this method, but it can be very accurate if all the conditions of assessment are met. Currently this method is not available in Hawaii at this time.

6. Skin-fold Assessment (SFA): This is a current method which has gained popularity with the exercise and fitness community. It is based on the relationship between subcutaneous fat and total body fat and its inverse relationship to body density number of sites to determine the thickness of the skin. Skin-fold thicknesses are used in a regression equation equations have been derived for specific populations. The cost of accurate calipers range from $175 to $ 250.

7. BOD POD: - an air-displacement plethysmograph for measuring human body composition, utilizes the inverse relationship between pressure and volume (Boyle's law) to measure body volume directly. The BOD POD utilizes computerized sensors to determine the amount of air displaced by the person's body within a confined area (the BOD POD). The whole-body measurement principle is the same as underwater weighing and the overall body density can be used to determine the percentage of fat and lean tissue. Developed in conjunction with the US National Institutes of Health, the test can be completed in less than 5 minutes.

D. METHOD COMPARISON

The Program calls for the assessment of all the wrestlers in the State of Hawaii within a two week period prior to the beginning of the season. Given the methods reviewed above to accomplish this task the appropriate choice is skin-fold assessment. There has been more work done to establish population specific methods, procedures, and calculations with the skin-fold method than with any other method. The cost of the methods is a factor to consider in the selection of a program. Standardization of procedures is a major factor in the control of validity and reliability. This can be best accomplished to insure accurate reproducible and fair results in an economically controlled environment through the skin-fold assessment procedures.
As hydrostatic weighing is currently unavailable in Hawaii, the BOD POD is a reliable and valid alternative to hydrostatic weighing which is recommended to be used for the appeal process. (The BOD POD is no longer an accepted measurement device as there is limited access. June, 2005)

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APPENDIX C

SKINFOLD ASSESSMENT TERMINOLOGY

The use of skin-fold assessment in the process of determination of body composition requires some standardization of terminology used in this field. The following is an attempt to accomplish this standardization:

1. Total Body Weight (TBW)=weight of the body on a certified, calibrated scale.

2. Body Density(BD)=the mass of the body per unit of volume. (The fat free component is assumed to have a density of 1.100 gm/cm3. The mass of fat is considered to be about .90 gm/cm3.)

3. Percent Body Fat(%BF)=the proportion of total body weight that is fat weight and expressed as a percentage. %BF = (TBW-LBM) / (TBW) x 100

4. Lean Body Mass(LBM)=the weight of the lean tissue of the body such as muscle, bone, and blood. The weight of the body without the fat weight. LBM = TBW-FW

5. Fat Weigh(FW)=the weight of the fat tissue of the body. Includes both essential and stored fat tissue. FW = TBW x %BF

6. Lowest Allowable Weight (LAW)=the lowest weight at which a wrestler may compete, determined to be 7 % body fat for males and 12% (12% 2005) for females in the Hawaii Wrestling Monitoring Program

7. Ideal Body Weight=a body weight selected for a specific individual or group based on both empirical and scientific evidence that provides an optimum level of performance.

8. Minimum Weight = a body weight selected for a specific individual or group based on a specific percent body fat. A minimal, but not necessarily ideal or optimum, body weight.

9. Regression equations=equations which express the relationship (based on correlation) between the criterion measure (GOLD STANDARD) and the prediction measure. In skin-fold assessment these are determined for specific combinations of sites, and specific populations.

10. Population Specificity=the attempt to make prediction calculation (equations) on representative subjects from specific groups of individuals, the results of which are intended to be applied to a similar, larger population. In skin-fold assessment for body composition the important specific factors are sex, age, national origin, maturation and hydration.

11. Biological Variability =variation which will contribute to error due to such factors as hydration and deposition sites.

12. Technical Variability =variability which will contribute to error due to such factors as lack of standardization of procedures among assessors.

13. Reliability = reproducibility, the consistency and dependability of a measure, >.9 with experienced assessors. Increases with fewer sites and monitored practice.

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14. Validity = degree to which an assessor obtains an accurate measure. How well the group being assessed matches the group from which the regression equation was obtained. Dependent upon: age, activity level, population specific, body composition status.

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APPENDIX D

SKIN FOLD SITE SELECTION AND IDENTIFICATION

The sites and regression equation selected for the Program are those described by Lohman specifically for use with young wrestlers. The techniques for site identification are adopted from "Anthropometric Standardization Reference Manual", Lohman, Roche, and Martorell, Human Kinetics Books, Box 5076, Champaign, IL 61820, (800-DIAL-HKP).

1. subject should be in standing anatomical position with the skin for potential skin-fold sites exposed.

2. all measurements are taken on the dominant side of the body

3. identify the sites for Males = TRICEPS, SUB SCAPULAR, ABDOMEN

4. identify the sites for Females = TRICEPS, ABDOMEN, SUPRAILIAC, THIGH
ABDOMINAL=measured vertically, the site is located 3 centimeters lateral to the midpoint of the umbilicus and 1 cm inferior to the umbilicus. The subject must stand erect with weight on both feet, relax the abdominal wall musculature and breathe normally during the assessment procedure.

SUBSCAPULAR=measured on a diagonal axis, (left shoulder to right hip) one centimeter below the inferior angle of the scapula. The site is angled infero-laterally about 45 degrees in the natural cleavage line of the skin. It may be necessary to have the subject place their arm behind the back to make the anatomical features more prominent. The arm is returned to the relaxed anatomical position for the measurement procedure.

SUPRAILIAC=a diagonal fold above the crest of the ilium at the spot where an imaginary line would come down from the mid-axillary line. The person being measured should stand erect with feet together. The arms should hang by the sides, but can be moved slightly to improve access to the site. A diagonal fold should be grasped just to the rear of the mid-axillary line, following the natural cleavage lines of the skin. The skin-fold caliper jaws should be applied about one-half inch from the fingers.

THIGH=a vertical fold on the front of the thigh, midway between the hip (inguinal crease) and the nearest border of the patella or knee cap. The person being tested should first flex his hip to make it easier to locate the inguinal crease. Be sure to pick a spot on the hip crease that is exactly above the midpoint of the front of the thigh. The closest border of the knee cap should be located while the knee is extended. When measuring the thigh skin-fold, the body weight should be shifted to the other foot, while the leg on the side of the measurement is relaxed with the knee slightly flexed and the foot flat on the floor.

TRICEPS=measured vertically in the midline of the posterior aspect of the upper arm, over the triceps muscle, midway between the lateral acromion process of the scapula and the inferior margin of the olecranon process of the ulna. Elbow is flexed to identify the landmarks but extended and relaxed to elevate the skin-fold.

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STANDARDIZED ASSESSMENT PROCEDURE

In an attempt to insure valid and reliable assessment of skin-fold widths the following general measurement techniques should be employed. These techniques are general in that they are applied to all skin-fold site assessments. The subjects skin should be dry. Measurements should not be taken immediately after a workout or when the subject is overheated. This may be an ever present problem because some of the wrestlers may be attempting to take part in rapid weight reduction through exercise just prior to the assessment-this should not be allowed. In addition the process requires that each wrestler pass a urine specific gravity test to determine adequate hydration level for the skin-fold assessment procedure.

There is no substitute for practice and experience as an assessor. Quality in-service participation, in-depth knowledge about the all aspects of the body composition assessment, careful site identification, and practice will assist in the accuracy and value of this Program.

1. palpate the site to familiarize both you and the subject with the area to be measured

2. elevate the double fold of skin and the subcutaneous fat with the thumb and index finger of the left hand 1 cm above or adjacent to the measurement site

3. become familiar with the width of the thumb and index finger as well as the perpendicular approach to site assessment prior to the elevation of each specific skin-fold site.

4. the fold should be lifted in such a manner as to have two parallel sides.

5. the long axis should be parallel to the natural cleavage lines of the skin.

6. measure with caliper in right hand with scale in a position to avoid error due to parallax.

7. measure midway between the body surface and the bulbous crest of the skin-fold.

8. caliper jaws are placed to measure the thickness of the skin-fold perpendicular to its long axis.

9. caliper pad measurement surface should be in contact with the skin-fold for 2 to 4 seconds.

10. record to the nearest .5 mm and obtain (through rotation of sites) three measures with no more than a 2.0 mm difference from the smallest to the largest measurement.

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APPENDIX E

BODY COMPOSITION FORMULAS

MALES

LOHMAN EQUATION-CALCULATION OF BODY DENSITY

BD=[1.0973-(∑ SF x .000815)]+[(∑ SF)2 x .00000084]

sum of SF = Triceps SF + SubscapuIar SF + Abdominal SF

BROZEK EQUATION-CALCULATION OF % BODY FAT FROM BODY DENSITY

% BF = (4.57/BD)-(4.142)

CALCULATION OF MINIMUM WEIGHT AT 7% BODY FAT

LAW=([1-% BF] x TBW) /.93

FEMALES

JACKSON-POLLOCK EQUATION FOR CALCULATION OF BODY DENSITY

D = 1.0961 - 0.000695 (∑ 4 SF) +0.0000011(∑ 4 SK)2 - 0.0000714 (age, years)

sum of SF = Triceps, Abdomen, Suprailiac, Thigh

BROZEK EQUATION-CALCULATION OF % BODY FAT FROM BODY DENSITY

% BF = (4.57/BD)-(4.142)

CALCULATION OF MINIMUM WEIGHT AT 12% (12% 2005) BODY FAT

LAW = ([1-% BF] x TBW) /.86 (.88, 2005)

APPENDIX F

TESTING GUIDELINES FOR WRESTLERS

It is important that wrestlers having their body composition tested follow the guidelines listed below. Certain factors can adversely affect the accuracy of body composition testing on any given day. In order to control as many of those factors as possible each wrestler to be tested should be provided with the following information.

1. Do not eat 4-5 hours before the test.
2. Avoid strenuous exercise for 10-12 hours before the test.
3. Avoid caffeinated beverages for 10-12 hours before the test.
4. Avoid any beverages or medications that may contain alcohol for 24 hours before the test.
5. Avoid the use of any diuretic drugs (fluid pills).
6. Consume water, juices, and non-caffeinated beverages as normal the 24 hours prior to the test.
7. DO NOT COME TO THE TEST DEHYDRATED.
8. Wear a t-shirt and shorts to the test.

ACCURATE RESULTS CANNOT BE OBTAINED IF THE TESTING IS PERFORMED IMMEDIATELY FOLLOWING A WORKOUT.

WEIGHTS MUST BE ACCURATELY OBTAINED IMMEDIATELY PRIOR TO THE TESTS BEING PERFORMED

September 2019

APPENDIX G

Equipment requirements for Wrestling body fat testing (Estimated)

The equipment requirements for body fat testing must be determined on the estimated number of athletes participating in wrestling in each league. The following is an estimate only and is probably on the conservative side. Exact data from each league secretary will provide a more complete picture, but for preliminary planning purposes, we can use the following numbers

Estimated distribution of athletes

Big Island Interscholastic Federation (BIF)	375
Maui Interscholastic League (MIL)	275
Oahu Interscholastic Association (OIA)	900
Interscholastic League of Honolulu (ILH)	450

The HHSAA will need to provide the appropriate forms for collection of data. This will not only mean development of the forms, but printing and distribution to all sites.

A majority of the equipment required to conduct the testing can be provided by the league or schools at minimal or no cost. The Site Manager will be responsible for arranging with the host school for a majority of the equipment needed to conduct the test, but will need cooperation from other schools in order to have all of the required equipment. Quantity will depend on the number of athletes scheduled for the testing protocol.

Scales (Digital preferred)
Clip Boards
Pens
Paper Towels
Paper cups
Colored dye toilet cleaner
Tables
Chairs
Computers - Lap top preferred
Printer
Internet connection
Equipment to be Purchased for testing (Estimate)

	Cost @
Skin Fold Calipers	$ 217.95
Refractometer	$ 350.00
Production of Nutrition Video 5 copies	$ 1000
Form Production & Duplication	$ 400

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APPENDIX H

Hawaii Wrestling Management System Instructions for Coaches in Hawaii

How to log into the program

1. Go to www.hiwrestlingmanagementsystem.com
2. Click on Hawaii Wrestling Management System in the upper right hand corner
3. Click "Login". Enter Login ID and password for coach.
4. You will now be logged into the program.

September 2019

APPENDIX I

Hawaii High School Athletic Association

• P.O. BOX 62029 • HONOLULU, HAWAII • PHONE: (808) 800-4092 • www.sportsHIgh.com •

HHSAA WRESTLING WEIGHT MONITORING PROGRAM

Parent and Student-Athlete Consent Form to Allow Specific Gravity Testing

About the test:

In order to determine a safe/healthy weight at which a wrestler can wrestle, the wrestler's specific gravity (hydration level) must be tested. To determine a wrestler's specific gravity, a urine sample from the wrestler must be tested. Only the wrestler's specific gravity will be measured from the urine sample and, upon the test's completion, the wrestler's urine sample will be promptly disposed. A certified tester (usually the wrestler's high school athletic trainer) will perform this specific gravity test, which takes less than five minutes to complete.

PARENT/GUARDIAN CONSENT

I hereby give my consent for _____(child's name) to participate in the Hawaii High School Athletic Association's (HHSAA) Wrestling Weight Monitoring Program ("Program"), including undergoing a urinalysis test to measure his/her specific gravity. I understand that the measurements will only be used to determine his/her safe wrestling weight. I agree to hold harmless the participating school, its member league, the HHSAA, and their respective officers, directors, employees (including coaches and athletic trainers), volunteers, independent contractors, agent, and assigns for anything arising out of the HHSAA's Wrestling Weight Monitoring Program, including the specific gravity testing procedure.

_____

Parent/Guardian Signature Date

STUDENT-ATHLETE CONSENT

I, _____(student-athlete's name), agree to participate in the Hawaii High School Athletic Association (HHSAA) Wrestling Weight Monitoring Program ("Program"), including undergoing a urinalysis test to measure my specific gravity. I understand that the measurements will only be used to determine my safe wrestling weight. I agree to hold harmless the participating school, its member league, the HHSAA, and their respective officers, directors, employees (including coaches and athletic trainers), volunteers, independent contractors, agents, and assigns for anything arising out of the HHSAA's Wrestling Weight Monitoring Program, including the specific gravity testing procedure.

_____

Student-Athlete Signature Date

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APPENDIX J

Hawaii High School Athletic Association
P.O. BOX 62029 • HONOLULU, HAWAII 96839 •
PHONE: (808) 800-4092
www.sportshigh.com

HHSAA WRESTLING WEIGHT MONITORING PROGRAM
PHYSICIAN'S STATEMENT

TO THE PHYSICIAN:

In order to prevent high school wrestlers from being in a state of dehydration and/or starvation and to encourage healthy weight management by high school wrestlers, the Hawaii High School Athletic Association (HHSAA) has instituted the Hawaii High School Athletic Association's Wrestling Weight Monitoring Program. As a part of the program each wrestler is given a specific gravity test and a body fat assessment. A minimum weight is then calculated as 7% body fat for males and 12% for females. A state of dehydration and or starvation may occur when a wrestler's weight drops below these recommendations.

During the Hawaii High School Athletic Association's wrestling weight monitoring program, your patient was assessed as less than 7% body fat for males or 12% for females. The athlete is requesting that he or she be allowed to wrestle at his or her present weight. Because this weight is less than 7% (for males) and 12% (for females) body fat, HHSAA guidelines require permission from the athlete's personal physician. Most adolescents require 7% body fat (males) or 12% body fat (females) to achieve optimal growth and development. However, there are some adolescents who are naturally lean and develop normally at a lower percent body fat.

Please evaluate your patient for normal growth and development, paying particular attention to weight fluctuations and his or her growth curve. Based on the patient's history and your examination, determine if his/her present weight is compatible with normal growth, development, and good health.

Thank you,

Chris Chun, Executive Director of HHSAA

September 2019

Hawaii High School Athletic Association
Wrestling Weight Management Program

PHYSICIAN CLEARANCE FORM

Wrestler's name:_____ Gender: Male Female

School:_____Grade: 9 10 11 12

Measurement Date:_____

Actual Weight: _____(lbs) Body Fat Percentage:_____%

I have examined the above named student-athlete and believe that based on the patient's history, and this examination, that his/her present weight is compatible with normal growth, development, and good health. I therefore approve of this student-athlete's participation at or above their actual weight listed on this physician clearance form.

PHYSICIAN'S SIGNATURE:_____DATE:_____

Print Name:_____

Address:_____City:_____Zip:_____

PARENT or GUARDIAN STATEMENT

As the parent or guardian of the above named student-athlete I support our doctor's decision regarding our son's/daughter's participation at the weight class at or above the Actual Weight listed on this form.

Parent signature:_____ DATE:_____

Print Name:_____Relationship to student:_____

COACH STATEMENT

As the coach for this athlete I support the doctor's and parent's decision regarding their patient's/son/daughter's participation at the weight class at or above the Actual Weight listed on this form.

Coach's Signature:_____ DATE_____

Print Name:_____

ATHLETIC DIRECTOR STATEMENT

As the athletic director of the above named student athlete's high school I affirm that the process of Physician Clearance has been completed properly.

Athletic Director's Signature:_____ DATE_____

Print Name:_____

- This form is the only document accepted as a "Physician Clearance."
- The wrestler may not compete until this form is received and his/her data has been entered into the Hawaii Wrestling Management System.

APPENDIX K

INSERT NEW WEIGH IN FORM

September 2019

APPENDIX L

Hawaii High School Athletic Association
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www.sportshigh.com

HHSAA WRESTLING WEIGHT MONITORING PROGRAM

Wrestler Descent Plan Freeze form

TO THE PARENTS, WRESTLER AND COACH:

In order to freeze an individual's weight descent plan, this form must be completed and signed by the wrestler, parent, coach and School Athletic Director. The completed form must be sent to the League Wrestling Coordinator who will send to the HHSAA State Weight Monitoring Coordinator (edpaola@ksbe.edu)

Once the State coordinator receives the completed form it will be verified, signed and dated by the State Coordinator and a copy will be sent to the individual wrestler's league coordinator by email. Once a descent plan is frozen, it cannot be unfrozen.

All questions concerning this should be communicated through each league's wrestling coordinator.

Thank you,

Chris Chun, Executive Director of HHSAA

September 2019

Hawaii High School Athletic Association
Wrestling Weight Management Program

DESCENT FREEZE FORM

Wrestler's Name: _____ Gender: Male Female

School: _____ Grade: 9 10 11 12

Date requesting plan to Freeze: _____ Weight Class: _____ Actual Weight: _____

I am requesting that my weight descent plan be frozen on the date above and at the weight class listed above. I also understand that this will not take effect until received and confirmed by the HHSAA State Weight Monitoring Coordinator. I also understand that once my plan has been frozen it cannot be unfrozen.

STUDENT/WRESTLER'S SIGNATURE: _____ DATE: _____

Print Name: _____ School: _____

Address: _____City: _____Zip _____

PARENT or GUARDIAN STATEMENT

As the parent or guardian of the above named student-athlete I support the decision of my child and his/her coach. I also understand that once his/her plan is frozen it cannot be unfrozen.

Parent signature: _____ DATE: _____

Print Name: _____ Relationship to student: _____

COACH STATEMENT

As the coach for this student/athlete I support the decision to freeze the student/athlete's weight descent plan and I also understand that once his/her plan is frozen it cannot be unfrozen.

Coach's Signature: _____ DATE: _____

Print Name: _____ SCHOOL: _____

Email Address: _____

ATHLETIC DIRECTOR STATEMENT

As the coach for this student/athlete I support the decision to freeze the student/athlete's weight descent plan and I also understand that once his/her plan is frozen it cannot be unfrozen.

Athletic Director's Signature: _____ DATE: _____

Print Name: _____ School: _____

Email Address: _____

To be completed by the HHSAA State Weight Monitoring Coordinator:

- This form is the only document accepted to freeze a descent plan.

Received on: Date: _____ Time: _____ Approved: _____ Date: _____

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