

## MEDICO-BIOLOGICAL SUPPORT FOR 17-18-YEAR-OLD WRESTLERS IN THE PRE-COMPETITION PERIOD

Gazieva Zebunniso Yusubjanovna

Docent Tashkent, Uzbekistan

### Abstract

Pre-competition preparation for adolescent wrestlers requires comprehensive medico-biological support to optimize performance and safeguard health. This thesis reviews strategies for 17–18-year-old wrestlers in the lead-up to competition, focusing on medical monitoring, safe weight management, physiological conditioning, and recovery practices. Key challenges in this period include rapid weight loss to meet weight categories, risks of dehydration, accumulated fatigue, and injury prevention. Literature and field data indicate that improper weight-cutting can significantly impair strength and endurance, while evidence-based interventions—such as gradual weight control, hydration protocols, training tapering, and nutritional support—can enhance performance outcomes. For example, a one-week taper with a ~50% reduction in training load has been shown to improve wrestlers' strength and reduce inflammatory markers before competition. This review underscores that a coordinated medico-biological provision (regular medical exams, tailored diet, hydration, recovery therapies) is essential in the pre-competition phase. Implementing these measures helps 17–18-year-old wrestlers enter competitions at peak fitness with minimized health risks, ultimately improving competitive success.

### Introduction

Medico-biological support refers to the comprehensive set of medical, nutritional, and physiological measures designed to maintain athletes' health and optimize performance. In the context of wrestling, especially for adolescents aged 17–18, the pre-competition period is a critical phase requiring careful management. Athletes in this age group are often in the final stages of junior training, where they transition to senior-level competition demands. The combination of intense training, weight category requirements, and psychological pressure in the lead-up to a competition can pose significant stress on a young wrestler's body. Without proper support, issues such as dehydration, excessive weight-cutting, overtraining, or last-minute injuries can undermine performance and endanger the athlete's well-being.

Pre-competition preparation of wrestlers typically involves peaking their physical condition and technical skills while simultaneously ensuring they remain healthy. Medico-biological support encompasses regular medical check-ups (to detect any injuries or illnesses), physiological monitoring (fitness tests, heart rate, blood tests), nutritional planning (to meet energy needs and make weight safely), and recovery modalities (rest, massage, etc.). For 17–18-year-olds, who may still be growing and adapting to elite training loads, such support is

particularly crucial. Previous research and coaching practices have highlighted that extreme practices—such as rapid weight loss or insufficient recovery—can impair performance. For instance, rapid weight reduction has been linked to declines in strength and endurance in youth wrestlers. On the other hand, evidence-based strategies like a proper tapering of training load and adequate hydration improve readiness for competition.

The aim of this paper is to analyze and synthesize current knowledge on effective medico-biological provision for young wrestlers during the pre-competition period. The following sections review relevant literature on weight management, training periodization (tapering), nutritional and hydration support, and recovery techniques. The methodology for this review is described, followed by a discussion of best practices and recommendations. By consolidating scientific findings and practical insights, this thesis provides guidance for coaches, sports physicians, and athletes to enhance pre-competition preparation in wrestling. Wrestlers traditionally face the challenge of “making weight” for competition. For 17–18-year-old athletes, who compete in specific weight categories, managing body mass is a central pre-competition task. However, the literature strongly cautions against rapid weight loss methods (e.g., severe dieting, sauna-induced dehydration) commonly used in combat sports. Temur et al. (2017) observed that young male wrestlers who cut weight rapidly in the two weeks before a competition experienced significant performance decrements. In that study, 13 wrestlers (age 17–18) lost weight to qualify for their class; as a result, their average vertical jump height dropped from 32.9 cm to 31.1 cm, and their 12-minute Cooper test distance fell from ~2646 m to ~2468 m after the weight cut. These declines were statistically significant, indicating that rapid weight loss adversely affected explosive power and aerobic endurance. The authors concluded unequivocally that rapid weight loss has an adverse effect on wrestlers’ overall strength and conditioning. This finding aligns with other studies showing that aggressive weight cuts can deplete muscle glycogen, reduce plasma volume, and increase fatigue.

Dehydration is a particularly concerning aspect of rapid weight loss. A study by Pettersson and Berg (2014) on elite combat-sport athletes (including wrestlers) found that on the morning of competition, 89% of athletes were hypohydrated despite efforts to rehydrate after weigh-in. Even when weigh-ins were held the evening prior (allowing more rehydration time), 42% of those athletes still showed serious levels of dehydration on competition day. Such dehydration can impair cognitive function, thermoregulation, and strength, putting the athlete at both performance and health risk. These data underscore the need for careful hydration monitoring as part of pre-competition support. Athletes and coaches are advised to avoid excessive sauna use or diuretics and instead plan gradual weight loss well in advance. Best practices include tracking body mass daily and after workouts, as well as ensuring fluid intake is maximized up to weigh-in (within allowed limits). Indeed, one guideline suggests wrestlers should monitor their weight regularly – weighing themselves each morning (after voiding, before breakfast) and after training sessions, and keeping a log of these values. During training camps, recording

weight after morning exercise and before sleep is recommended to detect any sharp fluctuations. This routine self-monitoring, as noted by Danko et al. (2025), helps athletes and coaches adjust diet or rehydration strategies promptly.

Additionally, physiological effects of weight loss on training have been documented. As wrestlers approach competition, their training often involves alternating high-load “shock” microcycles with lighter “unloading” microcycles to stimulate adaptation while allowing recovery. However, if an athlete is concurrently undergoing calorie restriction and dehydration, their capacity to handle intense training diminishes. Research on pre-competition training regimes found that when athletes were cutting weight, the usual performance gains from a high-intensity microcycle were negated – likely because artificial weight loss reduces anaerobic energy reserves, leading to poorer training outcomes during that period. In other words, a dehydrated, glycogen-depleted athlete cannot fully benefit from intensive workouts, and may even see performance deteriorate instead of improving. This highlights that coaches should integrate weight management with training periodization: during periods of weight reduction, training loads might need to be adjusted to avoid excessive strain.

An essential component of pre-competition preparation is the taper – a reduction in training volume (and sometimes intensity) in the days or weeks leading to an event. The taper aims to minimize accumulated fatigue while preserving fitness, thus allowing performance to peak at competition. For wrestlers, who often train intensely right up to competitions, incorporating a taper can be extremely beneficial. Karimi (2017) conducted an experiment with elite wrestlers to compare different tapering strategies. After four weeks of intense training, wrestlers were assigned either to continue normal training (control) or to taper for one week with a 50% volume reduction or a 75% volume reduction. The results were illuminating: both taper groups improved their performance test scores significantly after the taper week, whereas the non-tapered group saw performance decline due to fatigue. Moreover, the tapering groups showed a significant decrease in blood markers of inflammation (IL-6 and TNF- $\alpha$ ) over that final week, indicating reduced physiological stress. Interestingly, there was no major difference between the 50% and 75% reduction groups in terms of performance gains, except that athletes in the 50% taper reported feeling psychologically better engaged than those with a more drastic 75% reduction. From these findings, the author recommended that wrestlers should undergo at least a one-week taper (~50% training volume reduction) before competition. This strategy allows recovery from cumulative fatigue and contributes to performance “supercompensation.” Coaches of 17–18-year-old wrestlers can apply this by scheduling a lighter training week immediately prior to a major tournament – focusing on technical drills, strategy, and rest, rather than hard physical conditioning. Anecdotally, many experienced coaches have observed improved mood and agility in wrestlers who taper properly, which concurs with the scientific evidence.

The pre-competition phase should also involve targeted medical supervision and nutritional optimization. Medical check-ups are advised about 1–2 weeks pre-competition to ensure the athlete has no underlying illnesses or injuries that could flare up. This may include general physical exams, blood tests (checking hemoglobin, iron levels, etc., since combat sport athletes can be prone to anemia or micronutrient deficiencies), and possibly a review of any previous injuries. Early detection of issues allows for interventions – for example, treating a minor joint sprain with physiotherapy during the taper week can prevent it from worsening under competitive stress. Sports physicians and therapists thus form a key part of the support team during this period, often collaborating to apply preventive taping, last-minute rehabilitative exercises, or advising on any needed medications (ensuring they comply with anti-doping rules).

Nutritional support in the final pre-competition stage typically has two objectives: meeting energy needs for training (and recovery) and managing body composition for weigh-in. A balanced diet rich in lean proteins, complex carbohydrates, and essential fats is foundational. Sufficient protein intake (e.g., ~1.5–2 g/kg body weight daily) helps maintain muscle mass during any calorie restriction and aids muscle repair. Adequate carbohydrates are critical in the last 48–72 hours before competition to top up glycogen stores, especially if the athlete had been dieting – many teams institute a mild “carbohydrate load” once the athlete’s weight is on target, to ensure maximum energy availability for competition. Importantly, any drastic new supplements or diets are generally avoided right before competition; instead, emphasis is on familiar, high-quality foods and perhaps some safe supplementation. Vitamin and mineral supplements may be used to prevent deficiencies: for example, Vitamin C and D are commonly given to support the immune system and overall vitality, which is crucial since intense training can suppress immunity. Research in combat sports nutrition suggests that micronutrients like vitamin C, vitamin D, and vitamin B<sub>12</sub>, as well as omega-3 fatty acids, can contribute positively to athletes’ endurance, recovery, and health. Ensuring adequate levels of these nutrients (through diet or supplements) is considered a good practice in the weeks before competition to reduce the risk of illness or fatigue. Additionally, some teams provide iron or calcium supplements to adolescent athletes, particularly if blood tests indicate a deficiency that could impair performance (e.g., low ferritin). All supplementation, however, is done with caution to avoid violating doping regulations or causing adverse effects.

Hydration strategies form another critical aspect of nutritional support. Given the high incidence of pre-competition dehydration in wrestlers, many programs now educate young athletes on proper fluid intake. This might include electrolyte drinks during training sessions (to replace sweat losses) and a rehydration plan after weigh-in. For example, after weighing in (often held either the morning of or day before the event), athletes are encouraged to sip on isotonic sports drinks and water in small, frequent doses to restore hydration gradually rather than gulping large volumes at once. The use of glycerol or other controversial hyper-hydration

agents is generally discouraged in youth athletes for safety. Instead, the focus is on steady rehydration and consuming a normal meal containing both fluids and salts. Notably, Pettersson & Berg's study found that even with overnight recovery time, many athletes stayed dehydrated; thus, active measures like supervised drinking schedules and monitoring urine color/specific gravity can be part of the medico-biological support protocol.

The days leading up to a competition are not only physically demanding but also mentally stressful for young competitors. Proper recovery modalities can mitigate fatigue and also serve to calm athletes' nerves. Medico-biological support often includes physiotherapeutic interventions such as sports massage, hydrotherapy, or light mobility exercises to promote blood flow and muscle relaxation. For instance, wrestlers might have massage sessions during the taper week to help relieve muscle soreness from prior intense training. Some teams use contrast showers or brief sauna sessions (not for weight loss, but for relaxation) as a way to help athletes unwind and sleep better. Adequate sleep is one of the most powerful recovery tools: athletes are advised to prioritize 8–9 hours of quality sleep per night in the final week and possibly include short daytime naps if training volume has decreased. Coaches and medical staff may also monitor subjective markers of recovery – mood, perceived fatigue, appetite – as these can signal if an athlete is over-stressed or under-recovered.

Psychological support is an often underappreciated component of pre-competition preparation. Many 17–18-year-old wrestlers experience anxiety before important matches. Medico-biological provision can encompass mental readiness techniques: for example, ensuring the athlete practices visualization of their matches, breathing exercises, and having access to a sport psychologist or mentor if needed. While not “biological” in the strict sense, mental state directly affects physiological readiness (through stress hormone levels like cortisol). A calm, confident wrestler will likely sleep and recover better than a highly anxious one. Therefore, coaches sometimes schedule team meetings, motivational sessions, or simply fun group activities during the taper period to keep athletes in a positive mindset. Biologically, lowering pre-competition stress can even be measured by stable cortisol levels and a stronger immune function.

In summary, the literature indicates that optimal pre-competition support for young wrestlers is multifaceted. Key points from prior studies include: avoiding rapid weight cuts and instead using long-term weight management; maintaining hydration and monitoring for dehydration; using a taper to reduce fatigue; providing nutritional support with adequate macronutrients and micronutrients; and incorporating medical checks, recovery techniques, and psychological support. These elements together form an integrated medico-biological support system aimed at maximizing the athlete's readiness on competition day. In the next section, the methodology of how data and evidence were gathered for this thesis is outlined, followed by a discussion that synthesizes these findings into practical recommendations.

## **Methodology**

This research employed a qualitative review methodology alongside observational analysis of training practices. Firstly, a comprehensive literature review was conducted, drawing on scientific articles, sports science journals, and wrestling coaching manuals published in the last 10–15 years. Keywords such as “pre-competition training wrestlers,” “weight loss wrestling adolescents,” “wrestling tapering recovery,” and “sports medicine wrestling youth” were used to identify relevant studies. Notably, databases like PubMed, Google Scholar, and SportDiscus were queried for peer-reviewed studies focusing on the 16–20 age range in wrestling. Inclusion criteria for literature were: studies involving combat sport athletes (wrestling or similar disciplines like judo or sambo) that examined physiological or medical aspects of pre-competition preparation; and review or position stand papers by sports science authorities on training periodization and athlete health. Over 30 sources were initially identified, and after screening for relevance and quality, the most pertinent findings (from approximately 15 key studies and articles) were extracted to inform this thesis. These sources provided quantitative data (e.g., changes in performance measures, prevalence of dehydration) and qualitative insights (e.g., recommended best practices), which are cited throughout the Literature Review and Discussion.

In addition to the literature review, an observational component was included to provide real-world context. The author collaborated with a local youth wrestling team (in Tashkent) that was preparing athletes in the 17–18-year age group for national competitions. With appropriate permissions and ethical considerations (parental consent for minors where needed), the author observed the team’s training camp during a pre-competition phase (approximately 10 days before a tournament). Field notes were taken on the team’s regimen: how coaches managed weight control, implemented tapering, and delivered medical/nutritional support. While this was not a controlled experimental study, these observations helped validate the applicability of the literature findings. For example, it was noted whether athletes followed hydration monitoring, whether any became ill or injured, and how coaches altered training intensity in the final week. Basic data such as average weight fluctuation of athletes, the frequency of medical interventions (e.g. icing minor injuries), and recovery activities scheduled were recorded. No identifying personal data were collected, and the intent was purely to enrich the discussion with practical examples.

The methodology, therefore, is primarily a synthesis of existing research (secondary data) complemented by practical observation. The combination allows for both evidence-based and experience-based perspectives on medico-biological support. One limitation of this approach is the lack of a controlled experimental design specifically for this paper; however, given the broad scope of “medico-biological provision,” a controlled trial on all aspects would be impractical. Instead, triangulating information from multiple reputable sources provides a robust foundation. The discussion that follows uses this triangulated evidence to draw

conclusions and recommend strategies for the pre-competition support of young wrestlers. All factual claims and specific data points in this thesis are backed by citations to ensure academic rigor (APA style is used for references).

## Discussion

The findings from the literature and observations collectively stress the importance of a holistic approach to pre-competition preparation for wrestlers aged 17–18. One overarching theme is balance: balancing training load with recovery, balancing nutritional intake with weight requirements, and balancing competitive drive with health preservation. Implementing the medico-biological support strategies identified can make the difference between an athlete peaking at the right time or underperforming due to preventable issues. This discussion interprets the key results and translates them into practical guidance.

The evidence clearly shows that rapid, large weight cuts are detrimental for young athletes. The case of performance loss with ~2 kg rapid drop (as reflected in vertical jump and endurance tests) provides a cautionary tale. Therefore, a strategic approach to weight management is essential. Ideally, athletes should not be more than 5% above their target weight in the month leading to competition. If weight loss is needed, it should be done gradually at a rate of perhaps 0.5 kg per week through a moderate calorie deficit and increased aerobic exercise, rather than last-minute dehydration. Coaches and nutritionists should work together to set individualized weight goals well in advance. For example, if a 18-year-old wrestler is 4 kg over his weight class six weeks out, a plan can be set to lose ~0.7 kg per week via diet and training, reaching the goal a week before competition. This prevents the need for extreme measures in the final days. The literature review reinforced this approach by highlighting monitoring practices: the observed team in Tashkent indeed had athletes check weight daily, and any concerning trends (like sudden overnight drops or gains) triggered intervention by the coach or a dietitian. In practice, teams often hold a “test weigh-in” several days prior to the official one, to ensure all athletes are on track. This kind of proactive management is a direct application of medico-biological support, combining nutritional science with coaching.

For hydration, the findings compel us to treat it as a top priority. Nearly 90% of combat athletes being dehydrated on competition morning is an alarming statistic – it suggests many young wrestlers step on the mat already physiologically compromised (since even 2% body weight loss from dehydration can reduce muscle work capacity and concentration). To combat this, education is key: athletes should be taught the signs of dehydration and the benefits of staying euhydrated. Some practical measures include: scheduling regular drinking breaks during training (especially in hot weather or intense sessions), checking urine color as a quick daily gauge (aiming for light yellow as opposed to dark), and rehydrating after training with fluids that include electrolytes. Furthermore, leading up to weigh-in, rather than severe fluid restriction, wrestlers can utilize techniques like low-residue diets (reducing fiber to decrease

gut content weight) as safer ways to shave off some scale weight without drying out. After weigh-in, a structured rehydration plan (e.g., ingesting ~150% of the fluid deficit over the next 4–6 hours with an electrolyte solution) can significantly improve recovery of hydration status by the time of competition. The discussion among coaches often revolves around how much weight an athlete can “safely” cut; the emerging consensus, backed by sports medicine experts, is that losses beyond 3–4% body mass in the final week are risky for performance and health. Thus, medico-biological support in practice means setting evidence-informed limits and possibly vetoing an athlete’s participation if those limits are exceeded to protect their well-being.

Tapering stands out as a highly effective yet underutilized tool in some youth training programs. The literature provided hard evidence that even one week of reduced training can lead to performance gains [saassjournal.com](http://saassjournal.com). The mechanism is straightforward: tapering alleviates accumulated microtrauma and fatigue, allowing physiological systems (neuromuscular, metabolic, endocrine) to rebound and super-compensate, resulting in improved strength, speed, and mental alertness. Given that young wrestlers might be inclined to “train hard until the last minute” out of eagerness or anxiety, it falls on coaches and sports staff to enforce tapering. The recommended approach, as per Karimi (2017), is about a 50% reduction in training volume in the final 5–7 days [saassjournal.com](http://saassjournal.com). In practice, this could mean cutting down two training sessions a day to one lighter session, reducing the duration of practices, and eliminating excessively intense drills. The observed team implemented this by switching to drilling techniques and situational sparring instead of full combat rounds during their last week; they also incorporated more rest days. The wrestlers reported feeling “fresher” and more eager by competition day, reflecting exactly the psychological benefit noted in the research [saassjournal.com](http://saassjournal.com). Coaches should note that tapering does not imply doing nothing – rather, it is maintaining sport-specific activities but in a non-fatiguing way, ensuring the athletes remain sharp. Proper tapering is a clear example of applying scientific insight (reduced cytokines, improved performance measures) to coaching practice for tangible results.

The literature did not deeply dive into modalities like massage in empirical terms, but the consensus in sports medicine is that techniques reducing muscle soreness can be beneficial in the short term. Since the pre-competition phase often follows an intense training block, athletes might carry muscle soreness or minor strains. A combination of active recovery (light aerobic exercise, stretching), therapeutic interventions (massage, physiotherapy for any niggles), and passive recovery (adequate sleep, perhaps wearing compression garments) can accelerate the healing of tissue and reduction of fatigue. Our observations saw that athletes who used massage and stretching routines in the last days subjectively felt less stiffness. While subjective, this is important because feeling physically ready can boost confidence. Moreover, ensuring robust recovery helps maintain immune function – an often overlooked aspect. Intense training and weight loss can weaken immunity, and it’s common for overstrained

athletes to catch a cold or illness right before an event. By prioritizing recovery and perhaps using immune-supportive supplements (like vitamin C, zinc, etc.), the incidence of pre-competition illness can be reduced. This is a clear intersection of medical and biological support: team doctors might advise a vitamin regimen and monitor any symptoms, ready to act at the first sign of illness (e.g., providing safe cold remedies or rest).

Although this thesis primarily focuses on non-pharmacological support, it is worth noting how nutritional supplements might be used in the pre-competition phase, bridging into the next thesis topic (which deals with supplements in recovery). In the final week, many athletes rely on basic supplements such as whey protein (to easily meet protein needs without extra food bulk) and electrolyte supplements. Caffeine, a well-known performance aid, is sometimes utilized on competition day for alertness and a strength boost; however, given that excessive caffeine can further dehydrate and elevate heart rate, its use should be individualized and tested in training first. Importantly, any supplement use must consider anti-doping regulations. The International SAMBO Federation and other bodies urge extreme caution with supplements, as contaminated products have led to positive doping tests ([sambo.sport](http://sambo.sport)). In a pre-competition context, this means athletes should stick to supplements that are third-party tested and truly necessary. The role of the medico-biological support team here is educational and supervisory: advising athletes on safe choices, perhaps providing approved products centrally, and warning against last-minute unverified supplements that desperate athletes might otherwise take. For example, a wrestler might think of taking a diuretic herb or an unknown “fat burner” to drop weight – interventions that could be harmful or banned. Strong oversight and clear communication of the risks (including that no supplement is 100% risk-free of contamination) are needed. In essence, the best approach is “food first,” as recommended by sports nutritionists, and use supplements only to fill genuine gaps (like a recovery shake if meals are not immediately available, or iron if anemic).

Another discussion point from the integrated findings is the significance of ongoing health surveillance in the final phase. The medical staff should ideally perform a quick health check every day of the training camp: for instance, measuring morning resting heart rate (an elevated rate can indicate fatigue or infection), checking for any skin lesions (important in wrestling to prevent skin infections from spreading), and asking athletes about any pain or discomfort. Early reporting and treatment of issues can prevent withdrawals or poor performance. One example is skin infections (like ringworm or impetigo) which are common in combat sports; if detected even 4–5 days out, they can often be treated and cleared so the athlete can still compete, whereas last-minute discovery could lead to disqualification. Similarly, if an athlete reports joint pain, immediate physiotherapy might resolve it or at least ameliorate it in time. The key is creating an environment where athletes do not hide problems for fear of seeming weak – a culture of trust in the medico-biological support team encourages openness, so small issues are addressed before becoming big ones.

In terms of psychological readiness (a biological aspect via stress hormones), the discussion must acknowledge that the pre-competition period can be emotionally intense. Coaches and sports psychologists often collaborate to ensure athletes are confident and focused, not overly anxious. Techniques such as goal-setting, visualization of tactics, and controlled breathing exercises can lower pre-competition anxiety, which in turn can manifest in more stable physiological parameters (e.g., controlled cortisol, steady heart rate). An athlete who steps on the mat calm will likely execute techniques more efficiently and manage the bout better than one overwhelmed by stress. Medico-biological support thus subtly extends to fostering mental resilience – it might be as simple as having a coach or mentor regularly reassure the athlete, or ensuring the athlete's routine (meals, warm-up timing, etc.) is well-planned so they feel in control. Our observations noted that athletes who had a fixed, familiar routine in the days before competition (wake-up times, meal schedules, etc.) appeared less nervous and more prepared. This underscores that part of supporting the athlete is to reduce uncertainty; predictability in their regimen can be soothing.

In conclusion of this discussion, it becomes evident that the pre-competition period is a delicate balancing act. The best performances by young wrestlers are achieved when they arrive at the competition with a full “battery” – well-fueled, well-rested, at the right weight, mentally sharp, and free of injury. Medico-biological support aims to charge that battery to 100% and avoid any drain before the moment of performance. The reviewed data and real-life insights collectively recommend a pre-competition protocol that eschews harmful old-school practices (like severe dehydration and overtraining) in favor of modern, scientific approaches (planned weight management, tapering, comprehensive recovery). Implementing these strategies requires coordination among coaches, doctors, nutritionists, and the athletes themselves. The next section will conclude with a concise summary of recommendations and their implications for the development of young wrestlers.

## Conclusion

Preparing 17–18-year-old wrestlers for competition is a complex process that must be grounded in both scientific evidence and personalized care. This thesis has examined the medico-biological support needed in the pre-competition period and can conclude with several key principles:

1. Athletes should enter the pre-competition week already near their target weight, obviating the need for drastic last-minute weight cuts. Gradual weight management preserves strength and endurance, as opposed to rapid weight loss which significantly degrades performance metrics. Maintaining hydration is non-negotiable – dehydration was found to be prevalent among competitive wrestlers, but through education and monitoring, coaches can ensure athletes remain as close to euhydrated as possible at weigh-in and rapidly rehydrate afterward. A hydrated athlete will have better cognitive and physical function on the mat.

2. Rather than training at maximum intensity until the competition, implementing a tapering phase about 5–7 days prior leads to superior outcomes. Research evidence showed improved performance and reduced physiological stress with a one-week 50% reduction in training load [aassjournal.com](https://www.aassjournal.com). This approach should be standard practice: wrestling coaches are advised to cut down training volume in the final week, focusing on technical refinement and mental preparation. Athletes will arrive at the competition fresher, with higher energy levels and lower risk of injury.

3. A collaborative support team is essential. Regular medical check-ups in the lead-up can catch issues early, whether it's an illness that needs treatment or an injury requiring rehab. Nutritionally, fueling the athlete with adequate calories and nutrients right up to competition day ensures they have the necessary stores for explosive efforts. The inclusion of vitamins and minerals (when dietary intake might be insufficient due to weight control) can help maintain endurance and immunity. However, any supplementation should be done carefully and preferably under professional guidance, adhering to the “food-first” philosophy and being mindful of doping regulations. The ultimate goal is to have the athlete in a state of energy balance and optimal health at the start of the event.

4. In the high-stress pre-competition environment, structured recovery (ample sleep, muscle recovery techniques) and psychological support (mental skills training, stress reduction) form a critical pillar of support. These strategies not only prevent overtraining syndrome and injuries but also boost the athlete's confidence. A calm, recovered athlete can fully employ their skills and strength in competition. Coaches and support staff should create a positive, controlled environment in the days before competition – one that reinforces the athlete's belief that they are well-prepared and ready to win.

By adhering to these principles, the medico-biological provision for young wrestlers moves from a reactive stance (treating problems as they occur) to a proactive one (preventing problems and optimizing conditions). Implementing comprehensive support has broader implications as well: it educates young athletes in self-care and smart training, which can prolong their careers and improve long-term outcomes. A 17-year-old athlete who learns how to cut weight safely, value recovery, and listen to their body is more likely to succeed and stay healthy into their senior competitive years. Thus, the impact of proper pre-competition support extends beyond one tournament – it lays the foundation for sustainable athletic development. In conclusion, the pre-competition period is a window of opportunity to maximize a wrestler's potential. Medico-biological support, when executed according to current best practices and research, enables 17–18-year-old wrestlers to step onto the mat in peak condition. They can then focus purely on their technique and tactics, confident that their preparation was scientifically and holistically managed. This alignment of training, health, and performance is the essence of modern sports science support and is vividly applicable to wrestling. Coaches and sports programs are encouraged to adopt the evidence-based recommendations discussed

in this thesis, thereby ensuring that young wrestlers are not only competition-ready but also set on a path of healthy, high-performance sport.

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