

Supplement B: Final Topics by Rank

<p>Topic: The impact of female physiology, including menstrual cycle, on the recovery process and the effectiveness of various recovery modalities and approaches, including passive recovery and sleep.</p>
<p>Topic rating: Round 1: NA Round 2: 5 out of 19 (mean score = 4.40) Round 3: 1 out of 14 (mean score = 4.58)</p>
<p>Research questions derived from athlete feedback:</p> <ol style="list-style-type: none"> 1. Does lack of focus on recovery in early stages of sport engagement limit long term development? 2. What are the sex-specific differences in recovery and responses to recovery modalities? 3. What are best practices for general recovery for females (e.g. hot/cold contrast, massage, stretching, etc)?
<p>Illustrative justifications (direct quotes):</p> <ul style="list-style-type: none"> • <i>Recovery is essential and from personal experience I can tell you my menstrual cycle messes with mine-would be nice to have effective strategies</i> • <i>I strongly agree that there needs to be more research on this topic. As a high performance athlete who learned about this topic well after my career in NCAA I would hope the next generation would be better equipped to understand how their body recovers not only when they have their period but the weekly cycles when not ovulating.</i> • <i>Recovery is important for training and injury prevention. I would be curious to see if there are any male vs. female differences and how the menstrual cycle impacts recovery too.</i>
<p>Illustrative dissenting justifications (direct quotes)</p> <ul style="list-style-type: none"> • <i>i believe i have data on this already</i>
<p>Topic: How the symptoms before, during, and after the bleeding phase of a menstrual cycle impact training and performance.</p>
<p>Topic rating: Round 1: NA Round 2: 3 out of 19 (mean score = 4.53) Round 3: 1 out of 14 (mean score = 4.58)</p>
<p>Research questions derived from athlete feedback:</p> <ol style="list-style-type: none"> 1. How does fatigability, ligament laxity, and strength change during different phases of the menstrual cycle? 2. How do Iron levels fluctuate throughout the menstrual cycle? Should female athletes consider altering nutrient intake during the bleeding phase to account for iron loss?

Illustrative justifications (direct quotes):

- *I know so little about this and can imagine the importance it plays in training and performance. It is crazy we dont have this research to me.*
- *This is another thing I know almost nothing about despite being a female athlete for my entire life and having a period for 12 of those years. I also have met countless female athletes who don't know what is normal/not normal with their period in general and how to handle changes in hormonal levels .*
- *As an athlete who is very much affected hormonally, physically, and mentally by the different phases of my menstrual cycle, this is extremely important to me. Tools & resources for better understanding how and especially WHY my reacts a certain way would be very helpful.*

Illustrative dissenting justifications (direct quotes):

- *We already have enough information on this topic...Barring any groundbreaking research, which of course is always possible, I don't think resources should be devoted to this. It's just the most visible difference between male and female athletes and so it's easy to get fixated on.*
- *Due to my IUD, (that i have had for 8 years) i do not get a period. So this is not really applicable to me.*

Topic: The short- and long-term effects of specific types of birth control options including different oral hormonal contraceptive pills, IUDs, the patch, etc on health, performance, and well-being.

Topic rating:

Round 1: 4 out of 17 (mean score = 4.40)

Round 2 (rewritten): 2 out of 19 (mean score = 4.63)

Round 3: 2 out of 14 (mean score = 4.55)

Research questions derived from athlete feedback:

1. Does knowledge of different types of contraception impact an athlete's choice of contraception as it relates to athletic performance? If so, how?
2. How does exogenous hormone use affect athlete mental health?
3. Are there connections between type of contraceptive and long-term performance outcomes?

Illustrative justifications (direct quotes):

- *Very understudied but very important especially as many of us want to put off kids for a while*
- *Society pushes contraception without telling you long term effects. Need more info.*
- *Would love to see this information. I have an IUD and would consider taking a different form of birth control (or none) if it were hindering my performance or health.*

Illustrative dissenting justifications (direct quotes):

- *Contraceptives wont help with my health and performance*
- *I do not use any types of birth control so this would not be helpful for me*

Topic: Tools, strategies, and interventions that support and strengthen mental skills, training, and performance for female athletes with or without potential mental health diagnoses (e.g., anxiety, depression, eating disorder, OCD, PTSD).

Combined topics:

<ol style="list-style-type: none"> 1. Tools and strategies that support mental skills, training, and performance for female athletes with or without potential mental health diagnoses (e.g., anxiety, depression, eating disorder, OCD, PTSD). 2. Programs and interventions that can strengthen mental health among female athletes with specific mental health concerns (e.g. anxiety, depression, eating disorder, OCD, PTSD), including for those with mental health diagnoses.
<p>Topic 1 rating: Round 1: 1 out of 17 (Mean score = 4.53) Round 2: 4 out of 19 (Mean score = 4.50)</p> <p>Topic 2 rating: Round 1: 5 out of 17 (Mean score = 4.37) Round 2: 16 out of 19 (Mean score = 4.05)</p> <p>Round 3 rating: 3 out of 14 (mean score = 4.50)</p>
<p>Research questions derived from athlete feedback:</p> <ol style="list-style-type: none"> 1. What are evidenced based practices for elite female athletes who have diagnosed mental health conditions like anxiety and depression? 2. What are the current systems in place to support the mental health of athletes seeking to transition out of sport? 3. What is the relationship between team sport and mental health support?
<p>Illustrative justifications (direct quotes):</p> <ul style="list-style-type: none"> • <i>I strongly agree that there needs to be tools and strategies not only in place but taught to help support mental skills, training, and performance for female athletes with or without potential mental health diagnoses. I say this because in my college career my school lost an athlete every year to one of these topics. I feel their deaths may have been prevented if the school and people attending were better educated on how to support someone suffering from mental health diagnoses. My hope is for my future children to go to college and not be exposed to these things by being better educated on these topics</i> • <i>Mental health is my number 1 focus for next season. Having access to this data and resources would be pivotal in the work I am putting into my craft.</i> <p>Illustrative justifications re: combining topics (direct quotes):</p> <ul style="list-style-type: none"> • <i>It makes sense to me, especially with the feedback of how it should be more tailored to each person rather than a group.</i> • <i>I think this was a logical combination.</i> • <i>After reading the feedback and some of the direct quotes, I like that this was combined because I don't feel like programs or groups are needed as much. I would say mental health really is individualized.</i>
<p>Illustrative dissenting justifications (direct quotes):</p> <ul style="list-style-type: none"> • No dissenting justifications. <p>Illustrative dissenting justifications re: combining topics (direct quotes):</p> <ul style="list-style-type: none"> • <i>I found it interesting that there was more support for finding tools and strategies for mental health versus interviews/programs. While I would agree with wanting more support for the first topic I don't think it is fair to neglect exploring mental health programs and how they can benefit college or high school athletes.</i>

- *It makes sense to combine them to reduce redundancy, but I do think offering programs for mental health is important at the program level because it is important to be proactive and not reactive regarding these topics.*

Topic: How best to fuel at different stages of the menstrual cycle to enhance performance, health, and well-being.

Topic rating:

Round 1: NA

Round 2: 1 out of 19 (mean score = 4.65)

Round 3: 4 out of 14 (mean score = 4.43)

Research questions derived from athlete feedback:

1. How do female athletes balance best practice in nutrition, hydration, and supplementation with feasibility, access and resources?
2. What are female elite athlete experiences with menstrual cycle related food cravings? How do they listen to or interpret these cravings?
3. What barriers do female athletes experience when trying to implement recommended nutritional strategies?

Illustrative justifications (direct quotes):

- *I get really weak in specific stages of my menstrual cycle and knowing when to best fuel during those stages will be a huge enhancement in my performance, health, and well-being*
- *I know my body reacts so differently during my cycle so knowing how to help my body during this time would be so beneficial.*
- *I strongly agree with this one as I do not know if we are supposed to fuel differently depending on the stage of the menstrual cycle for performance and wellbeing. I know sometimes around my period I might be more hungry and crave different things...*

Illustrative dissenting justifications (direct quotes):

- *Already have enough information on this topic.*

Topic: Sport-specific fueling, supplementation, and hydration strategies (timing, macro/micronutrients) while traveling and during different stages of training (in competition, out of competition) and competition (pre-, during, and post-competition).

Combined topics:

1. Sport-specific fueling and hydration strategies (timing, macro/micronutrients) during different stages of training (pre-season, within-season, off-season) and competition (pre-competition, during competition, post-competition/recovery).
2. Sport-specific supplementation (vitamins, minerals, other performance enhancing foods/drinks like coffee) strategies to optimize female athlete performance.

Topic 1 rating:

Round 1: 10 out of 17 (Mean score 4.05)

<p>Round 2: 12 out of 19 (Mean score = 4.23)</p> <p>Topic 2 rating: Round 1: 8 out of 17 (Mean score = 4.16) Round 2: 15 out of 19 (Mean score = 4.15)</p> <p>Round 3 rating: 5 out of 14 (mean score = 4.43)</p>
<p>Research questions derived from athlete feedback:</p> <ol style="list-style-type: none"> 1. Where do female athletes get information on safe sports supplements? 2. What role can supplements play in preventing illness while traveling? 3. What specific nutritional considerations exist for disabled female athletes?
<p>Illustrative justifications (direct quotes):</p> <ul style="list-style-type: none"> • <i>I think all the above is very important because fueling your body appropriately will vastly help performance. So knowing how to fuel and supplement etc during each part of the training process/competition matters.</i> • <i>I feel the emphasis on how nutrition/fueling/hydration must change and adapt during traveling & different training stages is particularly important & not addressed enough (other than things like, hydrate more while flying)</i> • <i>At a recent training camp we had for my sport, specialists talked about how elite athletes are more prone to illness and also how travel can affect that as well. I really think this is crucial to athletes in general, and learning how to properly take nutrients or supplement when needed can help avoid the worst case scenario of getting ill right before a major competition, etc.</i> <p>Illustrative justifications re: combined topics (direct quotes):</p> <ul style="list-style-type: none"> • <i>I think fueling, hydration, and supplementation is all connected, so makes sense to combine.</i> • <i>Fueling and supplementation naturally flow together and can be complementary and both are very important in the nutrition area. The redundancy is reduced by combining. I like the sport-specific, almost think it could be position specific would be even better! Then the body types and proportions would be even more similar.</i>
<p>Illustrative dissenting justifications (direct quotes):</p> <ul style="list-style-type: none"> • <i>I have what I need in terms of nutrition education and dietician specific support.</i> • <i>I think there is a lot of information on this topic already. Every trip we go on our sports scientist gives us a packet of information for fueling properly during the travel, and in my sport it's required to get routine bloodwork and health analyses to make sure that everything is healthy and normal.</i> <p>Illustrative dissenting justifications re: combined topics (direct quotes):</p> <ul style="list-style-type: none"> • <i>I am not sure about this one as there are different restrictions within USADA for supplements versus food.</i>
<p>Topic: The influence of female physiology on strategies for optimizing training and analyzing performance in order to attain peak physical performance outcomes over the course of a season or athletic career.</p>

<p>Topic rewrite: Strategies for optimizing training and utilizing sports performance testing that incorporates female physiology to attain peak physical performance over the course of a season and athletic career.</p>
<p>Topic rating: Round 1: 3 out of 17 (mean score = 4.40) Round 2: 18 out of 19 (mean score = 3.98) Round 3 (rewritten): 6 out of 14 (mean score = 4.33)</p>
<p>Research questions derived from athlete feedback:</p> <ol style="list-style-type: none"> 1. Can one assess recovery by HRV proxy? Do recovery practices informed by HRV produce more optimal training, performance, wellbeing, and/or health outcomes? 2. How does an athlete best adapt and train to optimize performance, health, and wellness through transitions experienced by female-bodied athletes, such as pre-puberty, puberty, adulthood, pregnancy and postpartum, menopause? 3. What sex differences exist in physiological responses to tapering?
<p>Illustrative justifications (direct quotes):</p> <ul style="list-style-type: none"> • <i>think this is important, but the topic above is more of a catch all</i> • <i>If there is an ideal training regimen that i can follow according to my body physiology to help me attain the peak physical performance when i need it, then i want to know about it!</i> • <i>I don't think this is something that is considered at all and absolutely should be. When your body is changing(depending on the age you enter/stay in your sport) there are considerations that should be made and adapted to in order to optimize your physical performance over time</i>
<p>Illustrative dissenting justifications (direct quotes):</p> <ul style="list-style-type: none"> • <i>I have what I need in this area.</i> • <i>I work with a physiologist already and feel i have an understanding of this area</i>
<p>Topic: Understanding similarities and differences between sports performance support and mental health support and how/when/where to seek care for each.</p>
<p>Topic rating: Round 1: NA Round 2: 11 out of 19 (mean score = 4.25) Round 3: 7 out of 14 (mean score = 4.30)</p>
<p>Research questions derived by athlete feedback:</p> <ol style="list-style-type: none"> 1. What are athletes' and/or coaches current understanding of the difference between sports performance and mental health support? 2. What is the relationship between sports performance anxiety and generalized anxiety? 3. From a mental health professional standpoint, where do sports performance professionals draw the line and refer their athlete to a mental health specialist and vice versa? 4. What barriers do athletes face in seeking sports performance and mental health support?
<p>Illustrative justifications (direct quotes):</p>

<ul style="list-style-type: none"> • <i>How, when and where to seek care is the biggest issue. The financial limitations of many Olympic athletes makes these resources, especially good quality resources, very difficult.</i> • <i>I am lucky in that I have a sports psychologist who also helps me with general mental health issues, but I have also been in scenarios with sports psychs that end up being completely inappropriate and misjudged outside of the context of sport. I think it would be great to have more information and tools that allow people to make a better decision about what kind of provider they need.</i>
<p>Illustrative dissenting justifications (direct quotes):</p> <ul style="list-style-type: none"> • <i>I would say that in order to perform as an athlete you need to address mental health as well as sports psychology, so I'm not sure that separating the two is completely possible. Especially when they can be so intertwined.</i> • <i>I would rate this as neither agree or disagree. Sometimes sports performance support and mental health support overlap. I personally know how to access both within my federation.</i>
<p>Topic: The impact of team dynamics and interpersonal relationships between and among athletes, coaches, and support staff on performance, physical and mental health, and well-being.</p>
<p>Topic rating: Round 1: NA Round 2: 6 out of 19 (mean score = 4.38) Round 3: 8 out of 14 (mean score = 4.25)</p>
<p>Research questions derived from athlete feedback:</p> <ol style="list-style-type: none"> 1. What is the relationship between team dynamics and disordered eating? 2. What is the prevalence of inter-athlete bullying on women's elite teams and how does it impact team performance? 3. How bullying or lack thereof impacts health and performance. 4. How to find the balance between building strong relationships and operating in a high stress and competitive environment?
<p>Illustrative justifications (direct quotes):</p> <ul style="list-style-type: none"> • <i>As a part of a team sport, this is highly valuable for coaches to understand the impacts of all the dynamics of a team sport on women.</i> • <i>Team dynamics can make or break a partner, season, or record. This is who you are spending the majority of your time with and everyone wants to feel as though they have a voice.</i> • <i>We have a training center where everyone trains together, and the high performance staff at our NGB don't understand the stresses this can cause or how interpersonal relationships between some team members can impact mental health. This would be very helpful.</i>
<p>Illustrative dissenting justifications (direct quotes):</p> <ul style="list-style-type: none"> • <i>This is highly important to my team because the success of the individuals depends on the team, but I think we are talking to the right people about how to improve this.</i> • <i>I do not think this is something that needs to be researched. Each person is so different and each team functions differently that I do not think any results would be helpful or useful</i> • <i>I'm confident that if we focus on mental health, this would be included.</i>

<p>Topic: The symptoms and potential health and performance consequences of low energy availability which is when the body doesn't have enough calorie intake to account for exercise and the caloric needs of daily life. (This can be inadvertent from an eating disorder or disordered eating, aka Relative Energy Deficiency in sport (REDs) or female athlete triad).</p>
<p>Topic rating: Round 1: 13 out of 17 (mean score = 3.86) Round 2 (rewritten): 10 out of 19 (mean score = 4.28) Round 3: 9 out of 14 (mean score = 4.15)</p>
<p>Research questions derived from athlete feedback:</p> <ol style="list-style-type: none"> 1. What are harmful stereotypes related to low energy availability and REDs? What type of awareness, education, and system/practice changes effectively combat these beliefs/stereotypes? 2. What forms of education and intervention are effective to prevent and address REDs in young female athletes?
<p>Illustrative justifications (direct quotes):</p> <ul style="list-style-type: none"> • <i>It will increase overall elite performance and save lives.</i> • <i>I think it is always good to understand topics like this. I think this topic can expand outside of eating disorders to also include how poor hydration and poor eating habits can hurt an athlete. I think it would also be wise to include that there are many factors that can influence these scenarios such as travel, weather or stress.</i> • <i>Being in a strength to weight ratio sport where eating disorders are rampant, I think this would be incredibly helpful. Ideally teaching young athletes from a young age how to properly fuel and look for warning signs could lead to a healthier future for our sport, because right now it has been getting worse and worse.</i>
<p>Illustrative dissenting justifications (direct quotes):</p> <ul style="list-style-type: none"> • <i>doesn't affect me personally; would be more interested to see how particular deficiencies (protein, iron, etc) impact performance</i> • <i>I feel like this is a very specific topic that would not benefit the majority of women in sport</i> • <i>Not prevalent in my sport</i>

<p>Topic: The impacts of institutionalized sexism and/or male dominated coaching and support staff on female athlete mental health and performance.</p>
<p>Topic rating: Round 1: NA Round 2: 9 out of 19 (mean score = 4.28) Round 3: 10 out of 14 (mean score = 4.13)</p>
<p>Research questions derived from athlete feedback:</p> <ol style="list-style-type: none"> 1. What role does a male dominated coaching staff have on female athlete mental health and performance? 2. Does a male coach/male dominated coaching staff deter young athletes from engaging in sport?

3. What are negative psychological and physiological impacts of underrepresentation (gender, race, ethnicity) in sport?
4. To what extent, if at all, do female athletes value having a female coach(es).

Illustrative justifications (direct quotes):

- *Sexism is a real struggle. We don't have the same visibility, viability, and equality in our sports. It is often used to treat athletes different because we are "girls."*
- *Would be fascinated to see the depth of this topic in sport to be researched.*
- *I strongly agree because I have dealt with this all my life and it has greatly impacted me on my mental health and performance*

Illustrative dissenting justifications (direct quotes):

- *In my sport personally I don't feel the weight of this. It is a very gender equal sport.*
- *I personally have not found this an issue in my career.*
- *This doesn't really apply in my sport.*

Topic: Training, performance, physical health and mental health considerations during pregnancy and postpartum return to sport.**Topic rating:**

Round 1: 9 out of 17 (mean score = 4.12)

Round 2 (rewritten): 8 out of 19 (mean score = 4.30)

Round 3: 11 out of 14 (mean score = 4.13)

Research questions derived from athlete feedback:

1. How can training during pregnancy optimize strength upon an athlete's return to sport postpartum?
2. How is sleep different for non-mother-athletes vs. mother-athletes? Does the difference in sleep (if it exists) impact recovery and/or performance?
3. How does pregnancy and postpartum experiences/precautions/training differ for athletes across various sports?

Illustrative justifications (direct quotes):

- *As a woman who has intentions of getting pregnant in the near future, I have begun to look for research on this and it is very limited. When making such a big decision in our lives and our careers there should be more information and science on the matter.*
- *Most female athletes don't know if they will be able to return to performance after having a baby.*
- *Having a lot of friends who are pregnant, trying to get pregnant, or have had multiple failed pregnancies--I think this is hugely important. Knowing how to approach this topic as a whole both physically and mentally would be a game-changer.*

Illustrative dissenting justifications (direct quotes):

- *I don't plan on being pregnant any time soon or returning to sport after pregnancy so I don't think this really applies to me.*
- *This is a subject that does not interest me*
- *This is not relevant to me.*

Topic: Effective strategies - including those related to fueling, physical and mental training, and rehabilitation - for female athletes to decrease injury and re-injury risk, and safely return to play post injury.

Topic rewrite: Effective strategies for female athletes to decrease injury and re-injury risk, and safely return to play post injury (including those related to fueling, physical and mental training, and rehabilitation).

Combined topics:

1. Nutrition and hydration strategies for female athletes to decrease injury and illness risk such as bone stress injury.
2. Injury management (prevention, detection, recovery) in female athletes (e.g., concussion, overuse injury, ACL, bone stress injury).

Topic 1 rating:

Round 1: 10 out of 17 (Mean score = 4.09)

Round 2: 7 out of 19 (Mean score = 4.35)

Topic 2 rating:

Round 1: 7 out of 17 (Mean score = 4.21)

Round 2: 14 out of 19 (Mean score = 4.15)

Round 3 rating: 12 out of 14 (mean score = 4.13)

Research questions derived from athlete feedback:

1. What strategies have been most effective for translating research-based injury management findings into on-field practices for female athletes to the athletes and their support teams?
2. What are the common recovery/healing experiences of female-bodied athletes from ACL tear? Do these narratives present any incongruences with best practices or with applied practices (what is actually used in the field)?
3. Do the latest ACL rehabilitation protocols improve female athlete health outcomes (i.e., return to sport timeline and reinjury rates)?
4. Do female athletes characterize their symptoms in a way that differs from that of male athletes, from that as non-athlete females, from that of the standard patient described in medical training?
5. Are there sex-specific differences in rates and severity of post-concussion syndrome? Does this differ by age, sport, demographics (socioeconomic status, race, ability)?

Illustrative justifications (direct quotes):

- *As I mentioned above, the mental aspect is especially important as that has always been the most difficult factor for me returning to sport post-injury (fear of reinjury)*
- *Injuries cause so much loss in an athletes career and there's reasons why female athletes have certain injuries but not enough study into it*

Illustrative justifications re: combining topics (direct quotes):

- *I like this one because prevention and post-injury rehab are usually similar if not the same.*
- *I think this was a good decision, because it seems to me that these fall under the same category and a researcher could always specify one or the other when they create a research topic.*

Illustrative dissenting justifications (direct quotes):

- *I have what I need from my strength coach and athletic trainer.*
- *I think there is a lot of information about fueling and lots of resources for rehab, however, all of it is very specific to the person.*
- *These are definitely important to know, but I feel that recently I have learned a lot about the resources that are available through the USOPC and generally know where to find this information.*

Illustrative dissenting justifications re combining topics (direct quotes):

- *The combination of decrease injury strategies and injury management doesn't make a lot of sense to combine. I would think decrease injury strategies and playing with an injury/performing with an extended injury could be another option.*

Topic: Female specific and individualized strength training considerations to optimize performance and reduce injury risk in female athletes.**Previously combined topics:**

1. Female specific strength training considerations to optimize performance.
2. The role of strength training in injury risk reduction in female athletes.

Topic 1 rating:

Round 1: 6 out of 17 (Mean score = 4.28)

Round 2: 17 out of 19 (Mean score = 4.05)

Topic 2 rating:

Round 1: 11 out of 17 (Mean score = 4.05)

Round 2: 13 out of 19 (Mean score = 4.18)

Round 3 rating: 13 out of 14 (mean score = 4.05)**Research questions derived from athlete feedback:**

1. Are women more prone to osteoporosis? What can we do to prevent this?
2. How does a post-pregnancy strength training program differ from a regular, competing strength training plan?
3. What is the minimum effective dose of strength training for the female athlete?

Illustrative justifications (direct quotes):

- *Any percentage gain to be made in this area is incredibly valuable*
- *Men and women are different and we need different individualized training. It would be difficult to create a unique plan for every athlete, but every athlete is worth it. Strengths trainers of these high-caliber athletes should put the time and effort into strength programs so athletes can be their best to perform well for their bodies.*
- *This is really important in a female athletes life. Strength training can change a females athlete for the better and having more research is really important*

Illustrative justifications re: combined topics (direct quotes):

- *This makes sense to me! Optimization but also reduction in injury are closely related and by optimizing performance, you may also lessen the impact on injury, so the interrelatedness of this makes total sense to have the two topics combined.*

- *I think the combination better encompasses strength training as a whole without such confusion.*

Illustrative dissenting justifications (direct quotes):

- *I don't necessarily see a need for more research on female specific strength training. I feel as though existing research and knowledge is adequate and resources should be devoted/prioritized to address larger gaps in research.*
- *Something I read in the report stood out to me, that strength training is so individual specific, that putting an emphasis on female specific may not be the most helpful. I think I agree with this. S&C is so individualized, that I think it is important to understand the female body and how training impacts it directly, yett taking a very specific and individualized approach to developing your own training plan.*

Illustrative dissenting justifications re: combined topics (direct quotes):

- No dissenting justifications regarding this topic combination.