Introduction

Thank you for your participation as an expert panellist in this study and for your responses to date. This is the third and final survey for this study.

Lateral ankle sprains are the most prevalent musculoskeletal injury sustained by individuals who participate in sports; they also account for the highest proportion of all musculoskeletal injuries presenting to US emergencies departments. Furthermore, lateral ankle sprains have the highest recurrence rate of all musculoskeletal injuries. It is estimated that up to 74% of individuals who sprain their ankle will experience recurrent sprains and/or ongoing symptoms of pain, swelling, instability and “giving way”. Return to sport (RTS) times vary for individuals who have sustained an acute lateral ankle sprain injury. At the moment, there are no clear criteria to guide RTS decisions after lateral ankle sprains.

The aim of this study is to use a Delphi approach to develop consensus for RTS criteria for individuals who have sustained an acute lateral ankle sprain injury.

You have been identified as having expertise in RTS decision making for athletes that commonly sustain acute lateral ankle sprain injuries. Your participation in this Delphi study will involve completing surveys about RTS criteria after acute lateral ankle sprain injury. Your anonymous responses will be used to develop expert consensus.

Your participation in this study is voluntary and you are able to withdraw at any time by contacting a member of the research team (details below). If you withdraw, you will not be asked to contribute any further data to the study, but data you have already anonymously contributed will be retained. This is due to the anonymity of responses, which means that we are unable to identify your responses among others in the data already collected. Your privacy will be maintained at all times. Survey data will be stored securely on password-protected hard drives/servers. You may not receive direct benefit from participating in this study, but we anticipate the study findings will inform RTS practices and decision-making processes. We will send you a summary of the study findings on completion of the project.

If you have any questions about this research, please contact Dr Michelle Smith at: m.smith5@uq.edu.au or +617 3365 4660.

If you would like to speak to an ethics research officer not involved in the study, you may contact The University of Queensland Ethics Coordinator at: humanethics@research.uq.edu.au or +617 3443 2102.

1. Please select one of the options below to confirm your consent to participate in this research project. If you choose to participate in this study and select “yes” then you will automatically be directed to the survey. If you choose not to participate and select “no”, you will be unable to continue.

- [ ] Yes, I agree/consent to participate in this study
- [ ] No, I do not agree/consent to participate in this study
Part 1: Panellist details

Thank you again for your participation in this Delphi study which aims to develop consensus for RTS criteria for individuals who have sustained an acute lateral ankle sprain injury. To enable us to send you feedback on group-level (de-identified) survey results, we will need to collect your name and contact details. This information will be removed from your survey responses to keep your responses de-identified.

* 2. Please add your details for the following items.

<table>
<thead>
<tr>
<th>Details</th>
<th>Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full name</td>
<td></td>
</tr>
<tr>
<td>Email address</td>
<td></td>
</tr>
<tr>
<td>Country in which you work</td>
<td></td>
</tr>
</tbody>
</table>
Part 2: Included and excluded RTS criteria

Based on your responses to Surveys 1 and 2, the following items reached consensus (>70% agreement) to be excluded as assessment items to support the RTS decision after an acute lateral ankle sprain.

For the purpose of this survey, return to sport (RTS) is defined as “sanctioned for unrestricted training and cleared/available for match play/competition selection”. (This is based on definitions of time loss injury from Fuller et al 2006 and RTS from Ardern et al 2016).

<table>
<thead>
<tr>
<th>Excluded Item</th>
<th>% Agreement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessment of structural integrity of the ligaments on imaging</td>
<td>89.1%</td>
</tr>
<tr>
<td>Assessment of health-related quality of life</td>
<td>85.4%</td>
</tr>
<tr>
<td>Assessment of The Functional Movement Screen™</td>
<td>83.9%</td>
</tr>
<tr>
<td>Assessment of ligamentous laxity</td>
<td>81.0%</td>
</tr>
<tr>
<td>Assessment of foot biomechanics</td>
<td>73.7%</td>
</tr>
<tr>
<td>Assessment of lower limb and/or trunk kinematics</td>
<td>74.5%</td>
</tr>
</tbody>
</table>

Based on your responses to the 1st and 2nd surveys, the following items reached consensus (>70% agreement) and are included as assessment items to support the RTS decision after an acute lateral ankle sprain.

<table>
<thead>
<tr>
<th>Included Item</th>
<th>% Agreement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessment of sport specific tasks</td>
<td>98.1%</td>
</tr>
<tr>
<td>Assessment of pain severity on sport specific physical activity</td>
<td>92.9%</td>
</tr>
<tr>
<td>Assessment of ankle range of motion</td>
<td>89.7%</td>
</tr>
<tr>
<td>Assessment of ankle muscle strength</td>
<td>86.5%</td>
</tr>
<tr>
<td>Assessment of hopping</td>
<td>86.5%</td>
</tr>
<tr>
<td>Assessment of agility</td>
<td>86.5%</td>
</tr>
<tr>
<td>Assessment of jumping</td>
<td>83.9%</td>
</tr>
<tr>
<td>Assessment of pain severity over the last 24 hours</td>
<td>81.3%</td>
</tr>
<tr>
<td>Assessment of perceived ankle reassurance/confidence</td>
<td>81.3%</td>
</tr>
<tr>
<td>Assessment of proprioception</td>
<td>75.5%</td>
</tr>
<tr>
<td>Assessment of perceived ankle instability</td>
<td>75.5%</td>
</tr>
<tr>
<td>Assessment of psychological readiness</td>
<td>74.2%</td>
</tr>
<tr>
<td>Assessment of ankle muscle endurance</td>
<td>72.9%</td>
</tr>
<tr>
<td>Assessment of dynamic postural control/balance</td>
<td>72.9%</td>
</tr>
<tr>
<td>Assessment of ankle muscle power</td>
<td>71.5%</td>
</tr>
</tbody>
</table>
We have mapped the above agreed-upon RTS items to domains, which represent separate aspects of RTS. The domains and aligned agreed-upon items are detailed in the following table.

<table>
<thead>
<tr>
<th>Domain</th>
<th>Included RTS assessment item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pain</td>
<td>Pain severity during sporting physical activity</td>
</tr>
<tr>
<td></td>
<td>Pain severity over last 24 hours</td>
</tr>
<tr>
<td>Athlete perception</td>
<td>Perceived ankle confidence/reassurance</td>
</tr>
<tr>
<td></td>
<td>Perceived ankle stability</td>
</tr>
<tr>
<td></td>
<td>Psychological readiness</td>
</tr>
<tr>
<td>Ankle impairments</td>
<td>Ankle range of motion</td>
</tr>
<tr>
<td></td>
<td>Ankle muscle strength</td>
</tr>
<tr>
<td></td>
<td>Ankle muscle endurance</td>
</tr>
<tr>
<td></td>
<td>Ankle muscle power</td>
</tr>
<tr>
<td>Sensorimotor control</td>
<td>Dynamic postural control/balance</td>
</tr>
<tr>
<td></td>
<td>Proprioception</td>
</tr>
<tr>
<td>Sport/functional performance</td>
<td>Sport-specific tasks</td>
</tr>
<tr>
<td></td>
<td>Hopping and jumping</td>
</tr>
<tr>
<td></td>
<td>Agility</td>
</tr>
</tbody>
</table>

* 3. Do you agree with the chosen domains and the mapping of the agreed-upon RTS items to the domains? (If you do not agree with the domains or the mapping of items you will have an opportunity to identify what you do not agree with in subsequent questions.)

- [ ] Yes, I agree with the domains and mapping of items to the domains
- [ ] No, I do not agree with the domains or mapping of items to the domains
### Part 2: RTS Domains

* 4. Do you agree with the domains created to house the agreed-upon RTS items? (The domains and items mapped to each domain are shown again in the table below.)

- [ ] Yes, I agree with the domains
- [ ] No, I do not agree with the domains

<table>
<thead>
<tr>
<th>Domain</th>
<th>Included RTS assessment item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pain</td>
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</tr>
<tr>
<td></td>
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</tr>
<tr>
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<td>Dynamic postural control/balance</td>
</tr>
<tr>
<td></td>
<td>Proprioception</td>
</tr>
<tr>
<td>Sport/functional</td>
<td>Sport-specific tasks</td>
</tr>
<tr>
<td></td>
<td>Hopping and jumping</td>
</tr>
<tr>
<td></td>
<td>Agility</td>
</tr>
</tbody>
</table>
Part 2: RTS domains

* 5. Do you agree with the creation of the domain "Pain"?
   - [ ] Yes
   - [ ] No
   - [ ] Unsure/I don't know
   
   If you answered 'no' or 'unsure', please explain your reasons.

* 6. Do you agree with the creation of the domain "Athlete perception"?
   - [ ] Yes
   - [ ] No
   - [ ] Unsure/I don't know
   
   If you answered 'no' or 'unsure', please explain your reasons.

* 7. Do you agree with the creation of the domain "Ankle impairments"?
   - [ ] Yes
   - [ ] No
   - [ ] Unsure/I don't know
   
   If you answered 'no' or 'unsure', please explain your reasons.

* 8. Do you agree with the creation of the domain "Sensorimotor control"?
   - [ ] Yes
   - [ ] No
   - [ ] Unsure/I don't know
   
   If you answered 'no' or 'unsure', please explain your reasons.
9. Do you agree with the creation of the domain "Sport/functional performance"?

- Yes
- No
- Unsure/I don't know

If you answered 'no' or 'unsure', please explain your reasons.
Part 2: Placement of RTS items in domains

* 10. Do you agree that each of the RTS items are placed appropriately in the domains? (The domains and items mapped to each domain are shown again in the table below.)

- Yes, I agree with the placement of the RTS items
- No, I do not agree with the placement of the RTS items

<table>
<thead>
<tr>
<th>Domain</th>
<th>Included RTS assessment item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pain</td>
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<td>Ankle muscle strength</td>
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<td></td>
<td>Ankle muscle power</td>
</tr>
<tr>
<td>Sensorimotor control</td>
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<tr>
<td></td>
<td>Proprioception</td>
</tr>
<tr>
<td>Sport/functional performance</td>
<td>Sport-specific tasks</td>
</tr>
<tr>
<td></td>
<td>Hopping and jumping</td>
</tr>
<tr>
<td></td>
<td>Agility</td>
</tr>
</tbody>
</table>
### Part 2: Placement of RTS items in domains

1. **Do you agree with the placement of the RTS item "Pain severity during sporting physical activity" in the domain "Pain"?**
   - [ ] Yes
   - [ ] No
   - [ ] Unsure/I don't know

   If you answered 'no' or 'unsure', please explain your reasons.

2. **Do you agree with the placement of the RTS item "Pain severity over the last 24 hours" in the domain "Pain"?**
   - [ ] Yes
   - [ ] No
   - [ ] Unsure/I don't know

   If you answered 'no' or 'unsure', please explain your reasons.

3. **Do you agree with the placement of the RTS item "Perceived ankle confidence/reassurance" in the domain "Athlete perception"?**
   - [ ] Yes
   - [ ] No
   - [ ] Unsure/I don't know

   If you answered 'no' or 'unsure', please explain your reasons.
<table>
<thead>
<tr>
<th>Question</th>
<th>Options</th>
<th>Additional Instructions</th>
</tr>
</thead>
<tbody>
<tr>
<td>* 14. Do you agree with the placement of the RTS item &quot;Perceived ankle stability&quot; in the domain &quot;Athlete perception&quot;?</td>
<td>Yes, No, Unsure/I don't know</td>
<td>If you answered 'no' or 'unsure', please explain your reasons.</td>
</tr>
<tr>
<td>* 15. Do you agree with the placement of the RTS item &quot;Psychological readiness&quot; in the domain &quot;Athlete perception&quot;?</td>
<td>Yes, No, Unsure/I don't know</td>
<td>If you answered 'no' or 'unsure', please explain your reasons.</td>
</tr>
<tr>
<td>* 16. Do you agree with the placement of the RTS item &quot;Ankle range of motion&quot; in the domain &quot;Ankle impairments&quot;?</td>
<td>Yes, No, Unsure/I don't know</td>
<td>If you answered 'no' or 'unsure', please explain your reasons.</td>
</tr>
<tr>
<td>* 17. Do you agree with the placement of the RTS item &quot;Ankle muscle strength&quot; in the domain &quot;Ankle impairments&quot;?</td>
<td>Yes, No, Unsure/I don't know</td>
<td>If you answered 'no' or 'unsure', please explain your reasons.</td>
</tr>
</tbody>
</table>
* 18. Do you agree with the placement of the RTS item "Ankle muscle endurance" in the domain "Ankle impairments"?
   ○ Yes
   ○ No
   ○ Unsure/I don't know

   If you answered 'no' or 'unsure', please explain your reasons.

* 19. Do you agree with the placement of the RTS item "Ankle muscle power" in the domain "Ankle impairments"?
   ○ Yes
   ○ No
   ○ Unsure/I don't know

   If you answered 'no' or 'unsure', please explain your reasons.

* 20. Do you agree with the placement of the RTS item "Dynamic postural control/balance" in the domain "Sensorimotor control"?
   ○ Yes
   ○ No
   ○ Unsure/I don't know

   If you answered 'no' or 'unsure', please explain your reasons.

* 21. Do you agree with the placement of the RTS item "Proprioception" in the domain "Sensorimotor control"?
   ○ Yes
   ○ No
   ○ Unsure/I don't know

   If you answered 'no' or 'unsure', please explain your reasons.
* 22. Do you agree with the placement of the RTS item "Sport-specific tasks" in the domain "Sport/functional performance"?

- Yes
- No
- Unsure/I don't know

If you answered 'no' or 'unsure', please explain your reasons.

* 23. Do you agree with the placement of the RTS item "Hopping and jumping" in the domain "Sport/functional performance"?

- Yes
- No
- Unsure/I don't know

If you answered 'no' or 'unsure', please explain your reasons.

* 24. Do you agree with the placement of the RTS item "Agility" in the domain "Sport/functional performance"?

- Yes
- No
- Unsure/I don't know

If you answered 'no' or 'unsure', please explain your reasons.
Part 3: Undecided RTS items that require decision

A number of other items included in the survey did not reach >70% agreement for their inclusion or exclusion.

For each of the items that did not reach consensus, we provide you with information on the percentage of panellists who indicated the item should or should not be included as a criterion to support the RTS decision after an acute lateral ankle sprain; and a summary of the reasons why panellists thought the item should or should not be included.

We recognise that in these surveys we have asked if an ‘assessment’ should be a ‘criterion’ to support this RTS decision. We acknowledge that this phrasing may be confusing as it is the result of the assessment, rather than the assessment itself, that informs the RTS criteria. For example, for a hopping assessment it would be something like a symmetry score/result (e.g. 90% symmetry) that would be the criterion for RTS. We would like to clarify that we are asking if the result of the assessment listed below should be included as a criterion to support the RTS decision after an acute lateral ankle sprain.

This is the final survey round and encourage you to read and consider each point carefully, and to make a decision.

To remind you, for the purpose of this survey, return to sport (RTS) is defined as “sanctioned for unrestricted training and cleared/available for match play/competition selection”. (This is based on definitions of time loss injury from Fuller et al 2006 and RTS from Ardern et al 2016).

Assessment of anaerobic and aerobic fitness

You, the panellists, agree that anaerobic and aerobic fitness should be addressed in the rehabilitation program and are important for optimal performance on RTS. The discussion below specifically relates to whether an athlete would not be medically cleared for RTS after an acute lateral ankle sprain because of their anaerobic or aerobic fitness.

67.1% of panellists indicated that anaerobic fitness should not be included as a criterion to support the RTS decision after an acute lateral ankle sprain and 61.3% of panellists indicated that aerobic fitness should not be included as a criterion. The reasons provided by panellists were aerobic and anaerobic fitness will be addressed in rehabilitation and are linked to performance but not medical clearance for RTS. They also indicated that these items would be assessed through sport-specific testing, which has already reached consensus and has been included as RTS criteria.

22.6% of panellists indicated that anaerobic fitness should be a criterion to support the RTS decision after an acute lateral ankle sprain, and 29.2% of panellists indicated that aerobic fitness should be a criterion. The reasons provided by panellists were that aerobic and anaerobic fitness are needed to meet the demands of sport.
* 25. Do you agree that a deficit in anaerobic fitness will not stop clearance of an athlete for RTS?

- Yes, I agree that a deficit in anaerobic fitness will not stop clearance of an athlete for RTS
- No, I think that full anaerobic fitness is required for clearance of an athlete for RTS
- Unsure/I don't know

If you have indicated "no", please indicate the reason(s) for your response.

* 26. Do you agree that a deficit in aerobic fitness will not stop clearance of an athlete for RTS?

- Yes, I agree that a deficit in aerobic fitness will not stop clearance of an athlete for RTS
- No, I think that full aerobic fitness is required for clearance of an athlete for RTS
- Unsure/I don't know

If you have indicated "no", please indicate the reason(s) for your response.

Assessment of acute:chronic workload
You, the panellists, agree that an assessment of acute:chronic workload should be used throughout the entire rehabilitation program to manage load. The discussion below specifically relates to whether an athlete would not be medically cleared for RTS after an acute lateral ankle sprain because of their acute:chronic workload ratio.

56.2% of panellists indicated that the acute:chronic workload ratio should not be included as a criterion to support the RTS decision after an acute lateral ankle sprain. Panellists indicated that the acute:chronic workload ratio is used to manage load throughout rehabilitation and on RTS, but it does not stop an athlete from RTS.

32.1% of panellists indicated the acute:chronic workload ratio should be criterion to support the RTS decision after an acute lateral ankle sprain. Panellists indicated that the acute:chronic workload ratio helps manage load and possibly decrease risk of injury.
27. Do you agree that a sub-optimal acute:chronic workload will not stop clearance of an athlete for RTS?

- Yes, I agree that sub-optimal acute:chronic workload will not stop clearance of an athlete for RTS
- No, I think that optimal acute:chronic workload is required for clearance of an athlete for RTS
- Unsure/I don't know

If you have indicated "no", please indicate the reason(s) for your response.

Assessment of performance during a full training session
The definition of RTS in this survey is "sanctioned for unrestricted training and cleared/available for match play/competition selection". Based on this definition, returning to full training alone (without clearance for match play/competition selection) means that the athlete has not yet returned to sport.

62.0% of panellists indicated that performance during a full training session should be included as a criterion to support the RTS decision after an acute lateral ankle sprain. Panellists indicated that performance during a full training session is the final step to determine ability to RTS.

28.5% of panellists indicated that performance during a full training session should not be criterion to support the RTS decision after an acute lateral ankle sprain. The reasons provided by panellists were that performance at training is not specific or measurable, and that return to training indicated RTS (but we have clarified above that based on our definition, return to full training does not mean an athlete has returned to sport).

28. Do you agree that completion of a full training session is required for an athlete to be sanctioned for match play/competition selection?

- Yes, I agree that completion of a full training session is required for an athlete to be sanctioned for match play/competition selection
- No, I do not think that completion of a full training session is required for an athlete to be sanctioned for match play/competition selection
- Unsure/I don't know

If you have indicated "no", please indicate the reason(s) for your response.
### Assessment of lower limb muscle power

In the previous surveys you agreed that the assessment of ankle muscle power, **jumping and hopping** be included as a criterion to support the RTS decision after an acute lateral ankle sprain. The discussion below specifically relates to whether lower limb muscle power should be measured separately and in addition to ankle muscle power, jumping and hopping.

64.2% of panellists indicated that the assessment of **lower limb muscle power** should be included as a criterion to support the RTS decision after an acute lateral ankle sprain. They indicated they would assess lower limb ankle muscle power by using tests such as jumping and hopping (both of which have already reached consensus are are included as criterion to support the RTS decision).

29.2% of panellists indicated that the assessment of lower limb muscle power should **not** be a criterion to support the RTS decision after an acute lateral ankle sprain. These panellists indicated that lower limb and ankle muscle power would be assessed together using jumping and hopping tests. Note, this is the same reason as the 64.2% of panellists who indicated that the assessment of lower limb muscle power should be included as a criterion to support the RTS decision.

*29. Do you agree that lower limb muscle power is assessed **together with** ankle muscle power and/or tests of jumping or hopping to determine an athlete's ability to RTS?*

- [ ] Yes, I agree that lower limb muscle power is assessed **together with** ankle muscle power, jumping and/or hopping to determine ability to RTS
- [ ] No, I think the assessment of lower limb muscle power should be **separate to** ankle muscle power, jumping and/or hopping to determine ability to RTS
- [ ] Unsure/I don't know

If you have answered "no", please indicate how you assess lower limb power differently with your athletes.
Assessment of hip and knee muscle endurance and strength

You, the panelists, agree that deficits in hip and knee muscle endurance and strength should be addressed in the rehabilitation program. The discussion below specifically relates to whether an athlete would not be medically cleared for RTS after an acute lateral ankle sprain because of their hip and knee muscle endurance or strength.

62.8% of panelists indicated that hip and knee muscle endurance should not be included as a criterion to support the RTS decision after an acute lateral ankle sprain, and 54.1% indicated that hip and knee muscle strength should not be included as a criterion. Panelists indicated they will address deficits in rehabilitation, but hip and knee muscle endurance or strength will not stop them from clearing an athlete to RTS.

29.9% of panelists indicated that hip and knee muscle endurance should be a criterion to support the RTS decision after an acute lateral ankle sprain, and 40.1% indicate that hip and knee muscle strength should be a criterion. The reasons provided by panelists were that hip and knee muscle endurance and strength could contribute to performance and injury risk. Many panellist acknowledged that they would indirectly assess hip and knee muscle endurance and strength using hopping, jumping or sports-specific tests (all of which have already reached consensus and are included in as assessments to support the RTS decision).

* 30. Do you agree that a deficit in hip and knee muscle endurance will not stop clearance an athlete for RTS who performs appropriately on hopping, jumping and sport-specific tests?

- Yes, I agree that a deficit in hip and knee muscle endurance will not stop clearance of an athlete for RTS
- No, I think that full hip and knee muscle endurance is required for clearance of an athlete for RTS
- Unsure/I don't know

If you have indicated "no", please indicate the reason(s) for your response.

* 31. Do you agree that a deficit in hip and knee muscle strength will not stop clearance of an athlete for RTS who performs appropriately on hopping, jumping and sport-specific tests?

- Yes, I agree that a deficit in hip and knee muscle strength will not stop clearance of an athlete for RTS
- No, I think that full hip and knee muscle strength is required for clearance of an athlete for RTS
- Unsure/I don't know

If you have indicated "no", please indicate the reason(s) for your response.
**Assessment of pain severity over the last week and pain on palpation**

All panellists agree that it is important to measure pain to support the RTS decision after an acute lateral ankle sprain. The discussion below specifically relates to how to measure pain, rather than the need to measure pain. In the previous surveys you agreed that the assessment of pain severity during sporting physical activity and over the last 24 hours be included as criteria to support the RTS decision after an acute lateral ankle sprain.

24.8% of panellists indicated that the assessment of pain severity on palpation should be included as a criterion to support the RTS decision after an acute lateral ankle sprain and 58.4% of panellists indicated that the assessment of pain severity over the last week should be included as a criterion. The reasons provided by panellists were related to the need to measure pain in general, but not specific to these measures of pain.

68.6% of panellists indicated that the assessment of pain severity on palpation should **not** be a criterion to support the RTS decision after an acute lateral ankle sprain, and 36.5% of panellists indicated that the assessment of pain severity over the last week should **not** be a criterion. Panellists indicated they would repeatedly assess pain over the last 24 hours and during sporting activities to see the change in pain over multiple days/weeks (but they would not assess average pain severity over a one week period as this does not show changes in pain over time). They indicated they would use pain on palpation to diagnose the injury, but not to determine RTS ability.

*32. Do you agree that assessment of pain severity on palpation is **not** required in addition to the assessment of pain severity during sporting physical activity and pain severity in the last 24 hours (repeated over multiple days/weeks) to determine an athlete’s ability to RTS?*

- [ ] Yes, I agree an additional assessment of pain severity on palpation is **not** required to determine ability to RTS
- [ ] No, I think that an additional assessment of pain severity on palpation is required to determine ability to RTS
- [ ] Unsure/I don't know

If you have indicated "no", please indicate the reason(s) for your response.
*33. Do you agree that assessment of a single measure of pain severity over the last week is not required in addition to the assessment of pain severity during sporting physical activity and pain severity in the last 24 hours (repeated over multiple days/weeks) to determine an athlete's ability to RTS?

- Yes, I agree that an additional assessment of a single measure of pain severity over the last week is not required to determine ability to RTS
- No, I think that an additional assessment of a single measure of pain severity over the last week is required to determine ability to RTS
- Unsure/I don't know

If you have indicated "no", please indicate the reason(s) for your response.

Assessment of swelling
There were many comments around the type of swelling that may be important to measure, and many panellists agreed that mild persistent swelling will not delay RTS after a lateral ankle sprain, but intra-articular swelling was important.

55.5% of panellists indicated that the assessment of swelling should be a criterion to support the RTS decision after an acute lateral ankle sprain. They suggested the need to specifically assess intra-articular swelling which can indicate intra-articular damage or synovitis.

37.2% of panellists indicated that swelling should not be a criterion to support the RTS decision after an acute lateral ankle sprain. They felt that it is not reasonable to delay RTS solely due to mild persistent swelling if function is restored and impairments are resolved.

*34. Do you feel the assessment of intra-articular swelling should be a criterion to determine an athlete's ability to RTS after an acute lateral ankle sprain?

- Yes
- No
- Unsure/I don't know

Please indicate the reason(s) for your response.
Assessment of ankle muscle length
Panellists agree that it is important to measure ankle range of motion and this has been included as a criteria to support the RTS decision after an acute lateral ankle sprain. Many panellists indicated that they would use the knee to wall test (knee straight and knee bent versions) to assess ankle range of motion. The discussion below specifically relates to whether ankle muscle length should be measured separately and in addition to ankle range of motion.

59.9% of panellists indicated that the assessment of ankle muscle length should not be included as a criterion to support the RTS decision after an acute lateral ankle sprain. Panellists indicated they would assess ankle range of motion (using a test such as the knee to wall test) to support the RTS decision but would not separately measure ankle muscle length to determine RTS ability.

26.3% of panellists indicated that the assessment of ankle muscle length should be included as a criterion to support the RTS decision after an acute lateral ankle sprain. The reasons provided by panellists were related to the need to measure ankle range of motion (which has already been included as a criteria to support the RTS decision after an acute lateral ankle sprain).

* 35. Do you agree that the assessment of ankle muscle length is not required in addition to the assessment of ankle range of motion to determine an athlete's ability to RTS?
   
   ☐ Yes, I agree that an additional assessment of ankle muscle length is not required to determine ability to RTS
   
   ☐ No, I think that an additional assessment of ankle muscle length is required to determine ability to RTS
   
   ☐ Unsure/I don't know

   If you have indicated “no”, please indicate the reason(s) for your response.

Assessment of ankle joint arthrokinematics
As mentioned above, panellists agree that it is important to measure ankle range of motion and this has been included as a criteria to support the RTS decision after an acute lateral ankle sprain. Like ankle muscle length, ankle joint arthrokinematics is another factor that may contribute to ankle range of motion. The discussion below specifically relates to whether ankle joint arthrokinematics should be measured separately and in addition to ankle range of motion to determine ability to RTS.

53.3% of panellists indicated that the assessment of ankle joint arthrokinematics should not be included as a criterion to support the RTS decision after an acute lateral ankle sprain. Panellists indicated they would assess ankle range of motion to support the RTS decision but would not separately assess ankle joint arthrokinematics.

37.3% of panellists indicated that the assessment of ankle muscle length should be included as a criterion to support the RTS decision after an acute lateral ankle sprain. The reasons provided by panellists were related to the effect of ankle range of motion (which has already been included as a RTS criteria) on function and injury risk.
36. Do you agree that the assessment of ankle joint arthrokinematics is not required in addition to the assessment of ankle range of motion to determine an athlete's ability to RTS?

- Yes, I agree that an additional assessment of ankle joint arthrokinematics is not required to determine ability to RTS
- No, I think that an additional assessment of ankle joint arthrokinematics is required to determine ability to RTS
- Unsure/I don't know

If you have indicated "no", please indicate the reason(s) for your response.

Assessment of straight line running speed
In the previous surveys you agreed that the assessment of sport-specific tasks be included to support the RTS decision after an acute lateral ankle sprain. The discussion below specifically relates to whether straight line running speed should be measured separately and in addition to sport-specific tasks to determine ability to RTS.

48.9% of panellists indicated that straight line running speed should not be included as a criterion to support the RTS decision after an acute lateral ankle sprain. They indicated they would assess straight line running speed, as needed, as part of their assessment of sport-specific tasks (which has already reached consensus and is included as an assessment to support the RTS decision).

45.3% of panellists indicated that straight line running speed should be a criterion to support the RTS decision after an acute lateral ankle sprain. The top reason was that straight line running speed is important for function and sporting requirements.

37. Do you agree that the assessment of straight-line running speed is not required in addition to the assessment of sport-specific tasks to determine an athlete's ability to RTS?

- Yes, I agree that an additional assessment of straight-line running speed is not required to determine ability to RTS
- No, I think an additional assessment of straight line running speed is required to determine ability to RTS
- Unsure/I don't know

If you have answered "no", please indicate the reason(s) for your response.
Assessment of static postural control/balance (defined as the coordination of muscles to keep the body's centre of mass within its base of support)

Dynamic postural control and sport-specific skills have both reached consensus and have been included as a criteria to support the RTS decision after an acute lateral ankle sprain. Panellists agree that the assessment of static postural control/balance will occur during the rehabilitation of an acute lateral ankle sprain. The discussion below relates to whether or not the assessment of static postural control/balance is a criterion to support the RTS decision.

46.7% of panellists indicated that static postural control/balance should be included as a criterion to support the RTS decision after an acute lateral ankle sprain. Panellists indicated that static postural control/balance would be assessed earlier in rehabilitation to determine ability to perform dynamic postural control and sport-specific tasks.

46.0% of panellists indicated that static postural control/balance should not be included as a criterion to support the RTS decision after an acute lateral ankle sprain. Panellists indicated that assessment of static postural control/balance will be superseded by dynamic postural control/balance and sport-specific tasks to determine ability to RTS.

* 38. At the end of the rehabilitation continuum, will you assess static postural control/balance to determine an athlete's ability to RTS after an acute lateral ankle sprain?

- [ ] Yes, I will assess static postural control/balance at the end of the rehabilitation continuum to determine ability to RTS
- [ ] No, I will not assess static postural control/balance at the end of the rehabilitation continuum to determine ability to RTS
- [ ] Unsure/I don't know

Please indicate the reason(s) for your response.

Assessment of ankle muscle reaction time

You, the panellists, agree that while ankle muscle reaction time may be important for ankle control and injury prevention, it cannot specifically be measured in a clinic without specialist equipment. Many panellists indicated that they would use hopping, dynamic balance, agility and sport-specific tests to indirectly assess ankle muscle reaction time. All of these items have already reached consensus and are included as criterion to support the RTS decision. The discussion below specifically relates to whether ankle muscle reaction time should (and can) be measured separately and in addition to hopping, dynamic balance, agility and sport-specific tests to determine ability to RTS.

46.7% of panellists indicated that ankle muscle reaction time should be included as a criterion to support the RTS decision after an acute lateral ankle sprain. 35.0% of panellists indicated that ankle muscle reaction time should not be included as a criterion to support the RTS decision after an acute lateral ankle sprain. All panellists indicated they cannot measure ankle muscle reaction time specifically in clinic, but they use the tests mentioned above as a proxy measure of reaction time.
**39. Do you agree that the assessment of ankle muscle reaction time is not required (and/or possible) in addition to the assessment of hopping, dynamic balance, agility and sport-specific tasks to determine an athlete’s ability to RTS?**

- Yes, I agree that an additional assessment of ankle muscle reaction time is not required/possible to determine ability to RTS.
- No, I think that an additional assessment of ankle muscle reaction time is required/possible to determine ability to RTS.
- Unsure/I don’t know.

If you have indicated “no”, please indicate the reason(s) for your response.

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**Assessment of patient-reported foot and ankle function (e.g. Foot and Ankle Ability Measure or Foot and Ankle Outcome Score)**

Panellists agree that it is important to use self-report measures to understand the athlete’s perspective when making the RTS decision. Self-report measures of perceived ankle stability (i.e. how steady and controlled the ankle feels when performing sporting tasks), perceived ankle reassurance/confidence (i.e. how confident the athlete is that he/she will not sprain their ankle when performing sporting tasks) and psychological readiness have already reached consensus and are included as criteria to support the RTS decision after an acute lateral ankle sprain.

44.5% of panellists indicated that patient-reported foot and ankle function (using questionnaires such as the Foot and Ankle Ability Measure or Foot and Ankle Outcome Score) should be included as a criterion to support the RTS decision after an acute lateral ankle sprain. The reasons provided by panellists were related to the need to understand the athlete’s perspective, but not specific to these measures of pain.

38.7% of panellists indicated that these self-report outcomes should not be included as they are not specific enough to identify problems with sport-specific function. Panellists indicate that measures of psychological readiness, and perceived confidence and stability during sport-specific tasks provide the required information to understand the athlete’s perspective.
* 40. Do you agree that the assessment of patient-reported foot and ankle function using questionnaires such as the Foot and Ankle Ability Measure or Foot and Ankle Outcome Score is not required in addition to the assessment of perceived ankle stability, ankle reassurance/confidence and psychological readiness to determine an athlete's ability to RTS?

- Yes, I agree that an additional assessment of foot and ankle function using questionnaires such as the Foot and Ankle Ability Measure or Foot and Ankle Outcome Score is not required to determine ability to RTS

- No, I think that an additional assessment of foot and ankle function using questionnaires such as the Foot and Ankle Ability Measure or Foot and Ankle Outcome Score is required to determine ability to RTS

- Unsure/I don't know

If you have indicated "no", please indicate the reason(s) for your response.
Part 4: Thank you!

* 41. This is the final survey of this Delphi study and we thank you very much for your participation. At the end of this survey we hope to have a list of domains and assessments that will form an RTS assessment battery to support the RTS decision after an acute lateral ankle sprain. The next step in this project will be to come up with specific criteria (outcomes/findings) for each assessment. If you would like to be invited to be involved in this future project, please indicate so below.

- Yes, I would like to be invited to be involved in a future project
- No, I do not wish to be invited to be involved in a future project

42. If there is anything else you would like to add regarding RTS criteria after an acute lateral ankle sprain, please add it here.

Thank you again for the time you have taken to complete this survey and the previous surveys.