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| **CRITICALLY APPRAISED TOPIC** |

**FOCUSED CLINICAL QUESTION**

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| For young athletes (aged 13-30 years) trying to return to sport after arthroscopic hip labral surgery, is short-term PT as beneficial as long-term PT in returning an athlete to sport at full strength? |

**AUTHOR**

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**CLINICAL SCENARIO**

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| A 26-year old female came to PT post hip labral repair and wishes to return to competitive ultimate frisbee. Pt wishes to return as quickly as possible but also wishes to not re-injure her hip. She has been given a protocol from her MD that says she can return to sport in 4-6 months but has done research on her own and found that some people can get back to their sport as short as 10 weeks out but also as long as 32 weeks out. She is unsure about her progress and asks PT for advice as to how quickly she should return to sport and what criteria she should meet when making this decision. |

**SUMMARY OF SEARCH**

[Best evidence appraised and key findings]

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| Eight studies found met inclusion and exclusion criteria, including 6 retrospective case-series and 2 qualitative studies (1 expert opinion and 1 review of evidence).   * Athletes wishing to return to sport after arthroscopic surgery should follow both temporal and criterion-based recommendations made by surgeons and can vary depending on complications with surgery or further procedures required. General recommendations of 12-20 weeks of time removed from surgery and participation in physical therapy and strength/agility training are required by most surgeons. Additionally, athletes should be able to complete certain exercises and sport-specific training before returning to sport, depending on the risk of re-injury determined by the surgeon. * Analyzing body mechanics for throwing, running, and general sport-specific training is imperative when returning athletes to play after arthroscopic hip surgery. Ensuring athletes participate in physical therapy is essential in the management of their recovery and can help prevent re-injury. |

**CLINICAL BOTTOM LINE**

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| Return to sport is based both off temporal recommendations and criterion suggested by surgeons. 97% of athletes who participate in physical therapy for a minimum of 12-20 weeks are able to return to sport at full capacity or even better than prior levels. Proper body mechanics, strength agility and sport specific training should be analyzed and approved before an athlete returns to play to ensure the risk of re-injury is low, especially for more agility-based sports. |

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| ***This critically appraised topic has been individually prepared as part of a course requirement and has been peer-reviewed by one other independent course instructor*** |

*The above information should fit onto the first page of your CAT*

**SEARCH STRATEGY**

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| **Terms used to guide the search strategy** | | | |
| **P**atient/Client Group | **I**ntervention (or Assessment) | **C**omparison | **O**utcome(s) |
| Athletes, hip labr\* repair  Hip labr\* surgery  Hip arthroscopic repair  Hip arthroscopic surgery | Physical therapy 3-4 months  Physiotherapy  Rehabilitation  Exercise  Short duration Physical Therapy | Physical therapy 6-8 months  Physiotherapy  Rehabilitation  Exercise  Long duration Physical Therapy | Return to sport  Return to play |

**Final search strategy (history):**

*Show your final search strategy (full history) from PubMed. Indicate which “line” you chose as the final search strategy.*

Pubmed:

1. Athlete\* AND (hip labr\* repair OR hip labr\* surgery OR hip arthroscopic repair OR hip arthroscopic surgery)
2. (Physical therapy 3-4 months OR short duration Physical Therapy OR physiotherapy OR rehabilitation OR exercise)
3. (Physical therapy 6-8 months OR long duration Physical Therapy)
4. (Return to sport OR return to Play)
5. **#1 AND (#2 OR #3) AND #4**

#5 was used as the final search strategy\*

*In the table below, show how many results you got from your search from each database you searched.*

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| **Databases and Sites Searched** | **Number of results** | **Limits applied, revised number of results (if applicable)** |
| **Pubmed**  **Embase**  **Cochrane**  **PEDro**  **SPORTDiscus** | **62**  **12**  **2**  **0**  **0** | **Adolescent: 13-18 years, Adult: 19+ years, Young Adult: 19-24 years, English, Results 2010-2022**  **31 results** |

## INCLUSION and EXCLUSION CRITERIA

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| **Inclusion Criteria** |
| Published since 2010  Population aged 13-30 y.o.  RTS  Case studies, systematic reviews of literature  Protocols  RCTs  Physical therapy performed minimum 3 mos  Power/strength/ROM for RTS  Only studies in English |
| **Exclusion Criteria** |
| Non-athletic population  Ages <13 and >30  Blogs  Chondroplasty  Capsular plication |

**RESULTS OF SEARCH**

**Summary of articles retrieved that met inclusion and exclusion criteria**

*For each article being considered for inclusion in the CAT, score for methodological quality on an appropriate scale, categorize the level of evidence, indicate whether the relevance of the study PICO to your PICO is high/mod/low, and note the study design (e.g., RCT, systematic review, case study).*

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| **Author (Year)** | **Risk of bias (quality score)\*** | **Level of Evidence\*\*** | **Relevance** | **Study design** |
| **Klingenstein GG et al (2012)** | **Downs&Black:**  **13/31** | **Level IV** | **Moderate-High** | **Retrospective case series** |
| **Domb BG et al (2014)** | **Quality Appraisal Checklist:**  **7/9** | **Level V** | **High** | **Qualitative Study/expert opinion** |
| **Frank RM et al (2018)** | **Downs&Black:**  **15/31** | **Level IV** | **Moderate** | **Retrospective case series** |
| **Lee S et al (2016)** | **Quality Appraisal Checklist:**  **4/9** | **Level V** | **Low** | **Qualitative Study-Review of Evidence** |
| **Weber AE et al (2017)** | **Downs&Black:**  **13/31** | **Level III** | **Low-Moderate** | **Retrospective comparative study** |
| **Locks R et al (2017)** | **Downs&Black:**  **17/31** | **Level IV** | **Moderate** | **Retrospective Case Series** |
| **Degen RM et al (2016)** | **Downs&Black:**  **15/31** | **Level IV** | **Low-Moderate** | **Retrospective Case Series** |
| **Nho SJ et al(2011)** | **Downs&Black:**  **14/31** | **Level IV** | **Low** | **Retrospective case series** |

\*Indicate tool name and score

\*\*Use Portney Table 36-1: Summary of Levels of Evidence (2020). If downgraded, indicate reason why.

**BEST EVIDENCE**

The following 2 studies were identified as the ‘best’ evidence and selected for critical appraisal. Rationale for selecting these studies were:

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| * **#2- the Domb article: This study discussed what surgeons wanted in regards to strength/power/ROM for their patients in return to sport and how much physical therapy they want their patients to undergo before RTS. Even though it was a qualitative study and it was a 7/9 on the quality score, it most related to the PICO question out of all of the articles that were found, which is why it was designated it a “high” relevance above all of the other articles.** * **#1- the Klingenstein article: This study discusses the RTS and physical therapy aspect more than any other article that was found (besides #2). It still isn’t the most high-quality study in that it was a retrospective case series and it was a 13/31 on the quality score, but it went into the most detail about physical therapy which was the goal when performing the research for this PICO. It wasn’t as great in relevance as #2, so it was designated at a Moderate-High relevance simply due to the fact that it went into more detail about PT than all of the other case series that were found.** |

**SUMMARY OF BEST EVIDENCE**

1. **Description and appraisal of *Return to sport after hip arthroscopy: aggregate recommendations from high-volume hip arthroscopy centers* by Domb BG et al, 2014**

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| **Aim/Objective of the Study/Systematic Review:** |
| The goal of this study was to create a general return to sport guideline as recommended by surgeons for time and criteria that surgeons recommend for athletes returning to play after arthroscopic hip surgery. The authors attempted to standardize results for time, criteria and risk of return to competitive sports. They also tried to determine what sports were at highest risk of re-injury. The authors noted the lack of consistency with protocols and recommendations for return to sport following hip arthroscopy and desired to create a general recommendation based off of expert opinions. |
| **Study Design**  [e.g., systematic review, cohort, randomised controlled trial, qualitative study, grounded theory. Includes information about study characteristics such as blinding and allocation concealment. When were outcomes measured, if relevant]  Note: For systematic review, use headings ‘search strategy’, ‘selection criteria’, ‘methods’ etc. For qualitative studies, identify data collection/analyses methods. |
| **Qualitative Study/expert opinion**  This study performed by Domb et al, was a qualitative study, compiling expert opinions from 27 orthopaedic surgeons from high-volume hip arthroscopy centers. As the outcomes of this study were determined from a survey/questionnaire, there was no blinding of the surgeons or the researchers to any of the results. The questionnaire that was sent to all 27 surgeons consisted of 3 questions regarding time frame for return to sport, criteria an athlete must meet prior to return to sport and categorization of common sports into high, medium or low risk categories. Surgeons answered questionnaires based off their personal experience with performing arthroscopic hip surgeries on different types of athletes, their experience as to what they perceived as the best temporal and criteria based on re-injury rates and their general knowledge about physiology and exercise. |
| **Setting**  [e.g., locations such as hospital, community; rural; metropolitan; country] |
| Since this was a qualitative study based on a survey sent to surgeons, the location was determined by where the 27 surgeons were employed. The researchers were based in Chicago, Illinois and sent questionnaires to high-volume arthroscopy centers around the US. |
| **Participants**  [N, diagnosis, eligibility criteria, how recruited, type of sample (e.g., purposive, random), key demographics such as mean age, gender, duration of illness/disease, and if groups in an RCT were comparable at baseline on key demographic variables; number of dropouts if relevant, number available for follow-up]  Note: This is not a list of the inclusion and exclusion criteria. This is a description of the actual sample that participated in the study. You can find this descriptive information in the text and tables in the article. |
| The participants of this study were 27 orthopedic surgeons who worked in high-volume arthroscopy centers. Each surgeon had experience between 50-5000 arthroscopic hip labral repair surgeries and were considered experts in this field prior to taking the survey. The athletes the surgeons discussed were from a variety of sports, including: kickboxing/martial arts, football, basketball, wrestling, surfing, volleyball, distance running, baseball, tennis, sprinting and golf. (They did not mention if more sports were discussed, these were the ones published in the article.) |
| **Intervention Investigated**  [Provide details of methods, who provided treatment, when and where, how many hours of treatment provided] |
| *Control* |
| This qualitative study did not separate into different groups, as the main method to this study was a survey/questionnaire, so therefore, there was no control group used. |
| *Experimental* |
| Since this was a reported survey via questionnaire, there was no explicit experimental group. Each surgeon had varying answers for temporal criteria as well as physical criteria that athletes would need to surpass in order to return to sport. With this being said, all surgeons require their athletes to participate in minimum 12 weeks physical therapy and strengthening post-surgery, as well as be able to perform all aspects of their sport pain-free. |
| **Outcome Measures**  [Give details of each measure, maximum possible score and range for each measure, administered by whom, where] |
| The primary measure used in this study was a 3-part questionnaire given to each surgeon. Each survey included the same 3 questions: 1) time frame for return to sport following hip arthroscopy, 2) criteria an athlete must meet prior to return to sport and 3) categorization of common sports as high, medium, or low risk. Answers for 1) ranged from 12-24 weeks, 2) included exercises: single leg squat, lateral agility drills, single-leg squat w/o pain, agility drills w/o pain, run w/o pain, jump w/o pain, reproduce all motions involved in the sport w/o pain, and minimal cartilage damage seen at arthroscopy, and 3) included sports from football to golf (mentioned above in participants). |
| **Main Findings**  [Provide summary of mean scores/mean differences/treatment effect, 95% confidence intervals and p-values etc., where provided; you may calculate your own values if necessary/applicable. You may summarize results in a table but you must explain the results with some narrative.] |
| The overall findings of this study were as follows:  **Recommendation of Weeks for RTS:**   |  |  | | --- | --- | | **No. of Weeks** | **No. (%) of Surgeons** | | 6-12 | 2 (7.5) | | 12-16 | 10 (37) | | 16-20 | 9 (33) | | 20-24 | 4 (15) | | No response | 2 (7.5) |   **Recommendations of Criteria for RTS:**   |  |  | | --- | --- | | **Criterion** | **No. (%) of Centers** | | Perform Single-Leg Squat | 5 (19) | | Perform Lateral Agility Drills | 5 (19) | | Perform Single-Leg Squat without Pain | 15 (56) | | Perform Lateral Agility Drills without Pain | 19 (70) | | Run without pain | 19 (70) | | Jump without pain | 16 (59) | | Reproduce all motions involved in sport w/o pain | 23 (85) | | Minimal Cartilage damage at return arthroscopy | 1 (4) |   **High, Medium, Low Risk for RTS**   |  |  |  |  | | --- | --- | --- | --- | | **Sport** | **High Risk (# of surgeons)** | **Medium Risk (# of surgeons)** | **Low Risk (# of surgeons)** | | Kickboxing/martial arts | 26 | 1 | 0 | | Football | 21 | 5 | 0 | | Basketball | 18 | 8 | 0 | | Wrestling | 18 | 5 | 0 | | Surfing | 10 | 10 | 5 | | Volleyball | 9 | 13 | 2 | | Distance running | 9 | 10 | 8 | | Baseball | 7 | 12 | 4 | | Tennis | 6 | 12 | 3 | | Sprinting | 4 | 14 | 6 | | Golf | 1 | 10 | 14 |   Most surgeons agreed that 12-20 weeks of rehabilitation after surgery was recommended for RTS for athletes, with highest criteria being pain free sport related movements as well as running and agility. The sports at highest risk for reinjury were football and kickboxing. The sports at lowest risk were golf and distance running. No other scores for data were reported in this study as it was expert opinions given by surgeons based off experience and no variables were being manipulated. |
| **Original Authors’ Conclusions**  [Paraphrase as required. If providing a direct quote, add page number] |
| An aggregate recommendation from the 27 surgeons at high-volume arthroscopic centers concluded that 12-20 weeks of physical therapy and time removed from surgery was required for return to sport. “Athletes should demonstrate the ability to perform pain-free running, jumping, lateral agility drills, and single leg squats.” (p. e905) Sports that require the most agility and range of motion of the hip were considered to be the highest risk of re-injury sports and therefore may require longer duration before return to sport. |
| **Critical Appraisal** |
| **Validity**  [Summarize the internal and external validity of the study. Highlight key strengths and weaknesses. Comment on the overall evidence quality provided by this study.] |
| This study had an overall quality score of 7/9 on the Quality Appraisal Checklist, indicating that it is a relatively high-quality study. The strengths of this study were that the surgeons being surveyed in this study were experts in their fields who had no monetary benefit or otherwise when providing answers. That being said, several of the authors of this study were funded by the American Hip Institute, which may or may not have skewed results of this study. Other limitations of this study include: small sample size of surgeons being surveyed, limited number of sports discussed and their risk of return to sport, limited criteria for return to sport and there were no variables to be manipulated. Overall, the evidence provided in this study is subjective due to it being expert opinion rather than numerical and factual based. However, the evidence was written on the basis that all participants (surgeons) were experts and had enough experience in their field to make clinical judgments of what they see as recommended criteria for their athletes. |
| **Interpretation of Results**  [This is YOUR interpretation of the results taking into consideration the strengths and limitations as you discussed above. Please comment on clinical significance of effect size / study findings. Describe in your own words what the results mean.] |
| Overall, this article can apply clinically to physical therapists because PT’s work closely with surgeons in determining return to sport rate of their athletes. This research can help determine temporal and criterion variables for their athletes with help of surgeons. It has been found that 12-20 weeks post-arthroscopic surgery in addition to a strict regimen of strengthening, range of motion and sport-specific training is most beneficial for athletes to return to sport without risk of re-injury. Although the sample size of this study was small, the results can be generalized to most athletes. Each surgeon saw a minimum of 50 patients with arthroscopic hip surgeries and therefore (50x27=) a minimum of 1,350 patients were used in determining the results of this study, as some of the surgeons had performed upward of 5,000 surgeries. (Therefore there were many more than 1,350 patients that helped to determine the baselines as to what the surgeons suggested in this study.) |
| **Applicability of Study Results**  [Describe the relevance and applicability of the study to your clinical question and scenario. Consider the practicality and feasibility of the intervention in your discussion of the evidence applicability.] |
| This study can be helpful for the physical therapist to provide further education for their patient on recommended timelines and criteria for their patient to meet before returning to sport. The current patient does not fall under one of the sports listed but can be generalized in the same category as football or basketball as ultimate frisbee requires similar agility, cutting, running and range of motion of the hip. The 12-20 week recommendation can be made to the patient, keeping in mind the pain free criteria also provided in the article and any other guidelines this patient’s specific surgeon may have. |

**(2) Description and appraisal of *Hip injuries in the overhead athlete* by (Klingenstein GG et al, 2012)**

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| **Aim/Objective of the Study/Systematic Review:** |
| The goal of this study was to determine whether hip function improved in overhead athletes after arthroscopic treatment of FAI/labral repair and to determine the rate that these athletes returned to play and pre-injury levels. |
| **Study Design**  [e.g., systematic review, cohort, randomised controlled trial, qualitative study, grounded theory. Includes information about study characteristics such as blinding and allocation concealment. When were outcomes measured, if relevant]  Note: For systematic review, use headings ‘search strategy’, ‘selection criteria’, ‘methods’ etc. For qualitative studies, identify data collection/analyses methods. |
| **Retrospective case series**  The study performed was a retrospective case series where data from the years 2007-2010 was taken and analysed for return to sport, re-injury rate and hip function in the 29 athletes who met the inclusion/exclusion criteria given by the researchers. |
| **Setting**  [e.g., locations such as hospital, community; rural; metropolitan; country] |
| Data for this study was taken from a registry of arthroscopic hip surgeries from 1 clinic (unspecified location) and narrowed to participants who were able to meet the inclusion/exclusion criteria. All data taken for this study was taken from patient medical records with patients giving informed consent and approval from the IRB. |
| **Participants**  [N, diagnosis, eligibility criteria, how recruited, type of sample (e.g., purposive, random), key demographics such as mean age, gender, duration of illness/disease, and if groups in an RCT were comparable at baseline on key demographic variables; number of dropouts if relevant, number available for follow-up]  Note: This is not a list of the inclusion and exclusion criteria. This is a description of the actual sample that participated in the study. You can find this descriptive information in the text and tables in the article. |
| 29 male athletes and 5 female athletes, aged 16-35 years old (median 21.4), met the inclusion/exclusion criteria given by the author of this study.  Inclusion Criteria: athletes w/clinical diagnosis of FAI w/pain on flexion, confirmation of intra-articular pathology via MRI (but minimal cartilage and articular damage otherwise)  Exclusion Criteria: prior hip surgery, x-ray with significant arthrosis, substantial dysplasia  16 athletes participated in baseball, the other 18 participated in lacrosse- 29% (n=10) were high school varsity athletes, 44% (n=15) were collegiate athletes and 27% (n=9) were professional athletes.  There were no patients lost in follow-up, minimum follow up was 12 months, average of 25 months, ranging from 12-41 months). All participants had labral/FAI arthroscopic surgery following a period of failed non-operative treatment. |
| **Intervention Investigated**  [Provide details of methods, who provided treatment, when and where, how many hours of treatment provided] |
| *Control* |
| This was a retrospective case series in which data was taken from medical records post-surgery, so there was not a specific control group mentioned in this article. Each participant who had participated in this study had failed conservative treatment prior to their surgical repair and participation in physical therapy. |
| *Experimental* |
| The difference in time that athletes took to return to sport varied depending on level of participation in sport, rehabilitation and determination to return to sport. There was no specific experimental group as this was a retrospective case series where medical data was reviewed after patients had returned to sport. Each athlete participated in minimum 2 sessions of outpatient physical therapy a week for 4 months following a 2-week period of restricted weight bearing with crutches. They then had their first follow-up at 6 weeks, then again at 3, 6 and 12 months. They then had a final follow up at 2 years. ROM was performed at each follow up and at 6, 12 and 24 months, strength and objective measures were also performed. Throwing programs were initiated at 3 months post-surgery, with most athletes being cleared to return to sport at minimum 4 months depending on symptoms and progress. |
| **Outcome Measures**  [Give details of each measure, maximum possible score and range for each measure, administered by whom, where] |
| Each patient was given a modified Harris hip score (mHHS), Hip Outcome Score (HOS) and Sport-specific hip outcome score (SSHOS) prospectively and then given the same 3 outcome measures at 6 and 12 months post-operatively. (Preoperative were only given to 25 participants but pos-operatively, 30 were collected.)  SD postoperatively: mHHS- 90 +/- 12, HOS- 95 +/- 5, SSHOS- 86 +/- 18.  **Outcome Measures Scoring:**  mHHS: maximum score of 91 (range from 0-91)  HOS: maximum score of 104 (range from 0-104)  \*It was not specified if the HOS was without the sport subscale or if the sport-specific HOS was taken from the HOS, therefore no data was provided for the maximum scoring and range of the Sport-Specific HOS. |
| **Main Findings**  [Provide summary of mean scores/mean differences/treatment effect, 95% confidence intervals and p-values etc., where provided; you may calculate your own values if necessary/applicable. Use a table to summarize results if possible.] |
| There was significant improvement for all outcome measures pre-post operatively by a significant margin that demonstrate a high improvement in pain relief and return to sport in most of the athletes by 6 months.  mHOS: SD 90 +/- 12, improvement of average of 22 (p<.01)  HOS: SD 95 +/- 9, improvement of average 21 (p<.01)  SSHOS: SD 86 +/- 18, improvement of average 36 )p<.01)  There was no significant change from 6-12 months follow up. 13 patients were able to return to sport by 6 months, with the remaining 17 able to RTS by their 12 month follow up. By 12 months follow up, 33/34 athletes were able to RTS at full strength/prior level of performance or better, with 1 electing to not participate further in collegiate level lacrosse due to recurring hip pain.  There is a 97% return to sport rate found in this article after hip arthroscopic surgery for FAI and labral repair. |
| **Original Authors’ Conclusions**  [Paraphrase as required. If providing a direct quote, add page number] |
| Overall, 97% of athletes who undergo arthroscopic surgery for FAI and labral repair are able to return to sport at full strength or even better than their previous level of play. A modified Harris hip score of 92 indicates a large improvement in symptoms of pain and level of participation in sport. This is also in agreement with previous studies performed on this topic. Some athletes were able to return to sport at 6 months post-surgery after extensive physical therapy, sport re-training and strength training, but the majority were able to return by 12 months. This indicates that there is a longer duration of rehabilitation required for higher level athletes to ensure that they decrease their risk of reinjury and return to prior level of function/play or better. Arthroscopic surgery for labral repair and FAI has been proven to be beneficial for overhead athletes and with proper mechanics and training, athletes have a high chance of returning to sport. |
| **Critical Appraisal** |
| **Validity**  [Summarize the internal and external validity of the study. Highlight key strengths and weaknesses. Comment on the overall evidence quality provided by this study.] |
| This article had a quality score of 13/31 on the Downs & Black Checklist, indicating that it is not the highest quality study. There was limited data reported as this was a retrospective case study with no manipulated variables.  Limitations: cannot determine longevity of career based off these results, clinical data for this study was only available for 88% of patients they could choose from, potentially adding to selection bias, pre and post-surgical data for outcome measures was only available for 23 of the participants in the study, lastly, the findings from this study were the product of 1 surgeon at a tertiary referral center.  Strengths: all 34 patients studied were able to return to sport by 12 months, outcome measures were discussed in detail and supported for their use in this population, inclusion and exclusion criteria as well as information about the participants was discussed in detail.  Overall the evidence provided in this study can be generalized carefully to certain populations. Since only 2 types of athletes were discussed (baseball and lacrosse players) and there are other overhead athletes, therapists and surgeons should be wary when generalizing results to other athletes, especially those who are not overhead athletes and require further biomechanical training for their sport. |
| **Interpretation of Results**  [This is YOUR interpretation of the results taking into consideration the strengths and limitations as you discussed above. Please comment on clinical significance of effect size / study findings. Describe in your own words what the results mean.] |
| Due to the sample size of this study being so small, readers of this article should hesitate before generalizing these results to all athletes. The timelines provided in this article were very broad and specific training criteria were not discussed, therefore should make readers hesitate to follow this data without referring to other texts. Although they do report that 97% of the athletes in this study were able to return to sport, the study size was very small and details about the specific physical therapy services provided were limited. (Although there are some pictures as examples of different exercises athletes can perform.) There are also other factors that need to be considered such as other body mechanics and prior strength of the athlete before using the results in this study. |
| **Applicability of Study Results**  [Describe the relevance and applicability of the study to your clinical question and scenario. Consider the practicality and feasibility of the intervention in your discussion of the evidence applicability.] |
| Although this article did not specifically discuss physical therapy specifically, it did mention physical therapy 2x/wk for minimum 4 months was required for all patients discussed in this article. It also discussed the likelihood of athletes returning to sport at full strength or even at a better level than they were at prior to their surgery. These results can be shared with the patient in the given scenario as both a timeline and to discuss prognosis with her since she is anxious about returning to sport already. Although ultimate frisbee isn’t necessarily an “overhead” sport, it does require throwing and proper body mechanics which this article focuses on when discussing requirements for returning an athlete to play. |

**SYNTHESIS AND CLINICAL IMPLICATIONS**

[Synthesize the results, quality/validity, and applicability of the two studies reviewed for the CAT. Future implications for research should be addressed briefly. Limit: 1 page.]

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| Both articles indicated in this CAT discuss the importance of length of time after surgery and criterion for returning to sport following arthroscopic hip labral/FAI repair. The Domb article discussed more exact time after surgery (12-20 weeks) than the Klingenstein article for returning athletes to sport, but both mention strengthening athletes and the high percentage (100% in the Domb and 97% in Klingenstein) of athletes who are able to return to sport. Klingenstein et al discusses the importance of analyzing all body mechanics in overhead athletes to ensure that athletes do not re-injure their hip labrums. This article also gives examples with images of what some of these exercises can include. The Domb article utilizes expert opinions from surgeons for strength and sport criterion, emphasizing the importance of physical therapy for management of post-surgery recovery.  Overall, all articles found for this specific PICO were relatively low quality and had several limitations each. Both articles reviewed for this CAT were limited due to sample size and quality scores. However, they were the most applicable to the PICO question. Unfortunately, neither article was a RCT, which would have been most applicable to the comparison on PT time that was being researched, but no studies of this variety were in the literature. This is a good indication that there is a need for RCTs on this topic to be performed in the future. (This may be hard due to ethical concerns for requiring some athletes to participate in shorter duration of PT and putting them at risk for re-injury, so the study would have to be performed with proper lengths of time of physical therapy.)  However, even though the studies found were low quality, they can be applied to the more athletic population that physical therapists will see in clinic. Additionally, they are applicable to the clinical scenario in question for this CAT because the ultimate frisbee player would qualify for the Domb study and potentially for the Klingenstein study as well. |

**REFERENCES**

[List all references cited in the CAT]

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| 1. Klingenstein GG, Martin R, Kivlan B, Kelly BT. Hip injuries in the overhead athlete. *Clin Orthop Relat Res*. 2012;470(6):1579-1585. doi:10.1007/s11999-012-2245-3 2. Domb BG, Stake CE, Finch NA, Cramer TL. Return to sport after hip arthroscopy: aggregate recommendations from high-volume hip arthroscopy centers. *Orthopedics*. 2014;37(10):e902-5. doi:10.3928/01477447-20140924-57 3. Frank RM, Ukwuani G, Clapp I, Chahla J, Nho SJ. High rate of return to cycling after hip arthroscopy for femoroacetabular impingement syndrome. *Sports Health*. 2018;10(3):259-265. doi:10.1177/1941738117747851 4. Lee S, Kuhn A, Draovitch P, Bedi A. Return to play following hip arthroscopy. *Clin Sports Med*. 2016;35(4):637-654. doi:10.1016/j.csm.2016.05.008 5. Weber AE, Kuhns BD, Cvetanovich GL, Grzybowski JS, Salata MJ, Nho SJ. Amateur and recreational athletes return to sport at a high rate following hip arthroscopy for femoroacetabular impingement. *Arthroscopy*. 2017;33(4):748-755. doi:10.1016/j.arthro.2016.10.015 6. Locks, R., Utsunomiya, H., Briggs, K. K., McNamara, S., Chahla, J., & Philippon, M. J. (2017). Return to play after hip arthroscopic surgery for femoroacetabular impingement in professional soccer players. *The American Journal of Sports Medicine*, *46*(2), 273–279. https://doi.org/10.1177/0363546517738741 7. Degen, R. M., Fields, K. G., Wentzel, C. S., Bartscherer, B., Ranawat, A. S., Coleman, S. H., & Kelly, B. T. (2016). Return-to-play rates following arthroscopic treatment of femoroacetabular impingement in competitive baseball players. *The Physician and Sportsmedicine*, *44*(4), 385–390. https://doi.org/10.1080/00913847.2016.1226123 8. Nho SJ, Magennis EM, Singh CK, Kelly BT. Outcomes after the arthroscopic treatment of femoroacetabular impingement in a mixed group of high-level athletes. *Am J Sports Med*. 2011;39 Suppl:14S-9S. doi:10.1177/0363546511401900 |