

Supplementary materials

Appendix 1 Search Strategy

	TITLE / ABSTRACT (keywords)	SUBJET (descriptive words)		
Concepts	Keywords	Mesh (Pubmed)	Mesh (Cochrane)	Emtree (Embase)
Femoro-acetabular impingement	"femoroacetabular impingement" "femoro-acetabular impingement" "hip pain"	"Femoracetabular Impingement"[Mesh] "Hip Injuries"[Mesh]	MeSH descriptor: [Femoracetabular Impingement] explode all trees MeSH descriptor: [Hip Injuries] explode all trees	'femoroacetabular impingement'/exp 'hip pain'/exp
Treatment	"conservative" "postoperative "	"Conservative Treatment"[MeSH] "Postoperative Period"[MeSH] "Postoperative Care"[MeSH]	MeSH descriptor: [Postoperative Period] explode all trees MeSH descriptor: [Postoperative Care] explode all trees MeSH descriptor: [Conservative Treatment] explode all trees MeSH descriptor: [Rehabilitation] explode all trees	'conservative treatment'/exp 'postoperative care'/exp 'postoperative period'/exp 'rehabilitation'/exp
Therapy	"physical therapy" "exercise therapy" "physiotherapy"	"Physical Therapy Modalities"[MeSH] "Physical Therapy Specialty"[MeSH] "physical therapy department, hospital"[MeSH] "Exercise Therapy"[MeSH]	MeSH descriptor: [Physical Therapy Modalities] explode all trees MeSH descriptor: [Physical Therapy Department, Hospital] explode all trees MeSH descriptor: [Physical Therapy Specialty] explode all trees MeSH descriptor: [Exercise Therapy] explode all trees MeSH descriptor: [Exercise] explode all trees	'physiotherapy'/exp 'kinesiotherapy'/exp 'exercise'/exp

Appendix 2 Study Characteristics

N°	Author(s)	Year	Title	Design	Abstract	Number of participants	Protocol available in text or appendix	Pre-existing protocol	Protocol developed specifically for the study	Protocol type	Number of TIDieR points	Number of CERT points
1	Abdelkader et al.	2023	Olympic fencer with femoroacetabular impingement syndrome uses active rehabilitation to avoid surgery: A case report	Case study	Fencer with femoroacetabular impingement (FAI) and diaphragmatic dysfunction, treated conservatively before the Olympic Games.	1	✓	✗	✓	Conservative	9	10
2	Bennell et al.	2017	Efficacy of adding a physiotherapy rehabilitation programme to arthroscopic management of femoroacetabular impingement syndrome: a randomised controlled trial	Randomized controlled trial	Tests the efficacy of a progressive rehabilitation program vs. no physiotherapy treatment in the post-operative period.	30	✓ Protocol developed by Bennell and al. (2014)	✓	✗	Post-operative	10	17
3	Casartelli et al.	2019	Exercise Therapy for the Management of Femoroacetabular Impingement Syndrome: Preliminary Results of Clinical Responsiveness	Case series	Tests the effectiveness of post-operative physiotherapy	29	✓	✗	✓	Post-operative	6	8
4	Cerrahoğlu et Durgun	2020	Bilateral femoroacetabular impingement syndrome: a case report	Case study	Patient underwent back surgery instead of hip treatment, conservative treatment for FAI with good results.	1	✓	✗	✗	Conservative	1	2
5	Di Benedetto et al.	2021	Outcomes in arthroscopic surgery and proposal rehabilitative treatment in femoral acetabular impingement syndrome	Case series	Tests the effectiveness of a multimodal physiotherapy rehabilitation program (exercise, manual therapy and hydrotherapy) for post-operative follow-up.	19	✓	✗	✓	Post-operative	4	6
6	Domb et al.	2013	Surgical dislocation of the hip versus arthroscopic treatment of femoroacetabular impingement: a prospective matched-pair study with average 2 year follow-up	Matched pair cohort study	Comparison between dislocation surgery and arthroscopy. Outcomes: preoperative vs. postoperative alpha angle, patient-related outcomes, arthritic development at 2 years postoperatively.	30	✓	✗	✗	Post-operative	0	0
7	Emara et al.	2011	Conservative treatment for mild femoroacetabular impingement	Case series	Early results of conservative treatment, mainly based on lifestyle modification	37	✓	✗	✓	Conservative	4	2
8	Gao et al.	2020	Outcomes of hip arthroscopy for femoroacetabular impingement in chinese patients aged 50 years or older	Case series	Hip arthroscopy in patients over 50 years of age, 2-year results.	27	✓	✗	✓	Post-operative	1	1
9	Grant et al. (Protocole préopératoire)	2017	The HAPI 'hip arthroscopy pre-habilitation intervention study: does pre-habilitation affect outcomes in patients undergoing hip arthroscopy for femoro-acetabular impingement?	Randomized prospective comparative controlled pilot study	To determine whether patient-specific exercises performed preoperatively of hip arthroscopy for femoroacetabular impingement affected postoperative recovery.	9	✓	✗	✓	Preoperative	8	10
	Grant et al. (Protocole post-opératoire)				Comparison between a group receiving a home-based program before surgery and a	18	✓	✗	✓	Post-operative	8	12
10	Griffin et al.	2022	Arthroscopic hip surgery compared with personalised hip therapy in people over 16 years old with femoroacetabular impingement	Randomized controlled trial (multicentric)	Comparison of arthroscopic and conservative treatment.	348	✓ Protocol developed by Griffin and al.	✓	✗	Conservative	11	12
11	Guenther et al.	2017	Arthroscopic hip surgery compared with personalised hip therapy in people over 16 years old with femoroacetabular impingement	Randomized controlled pilot study	Evaluating the effectiveness of a pre-operative muscle-strengthening program.	20	✓	✗	✓	Preoperative	8	11
12	Kemp et al. (Protocole de renforcement spécifique)	2018	The Physiotherapy for Femoroacetabular Impingement Rehabilitation STUDY (physioFIRST): A Pilot Randomized Controlled Trial	Randomized controlled pilot study	Comparison of two physiotherapy treatments: a program targeting specific strengthening and a control group based on stretching.	24	✓	✗	✓	Conservative	11	14
	Kemp et al. (Protocole du groupe contrôle)						✓	✗	✓	Conservative	10	13
13	LeBeau et Nho	2014	The use of manual therapy post-hip arthroscopy when an exercise-based therapy approach has failed: a case report	Case study	Patient with abnormal, persistent pain at 13 weeks post-op. Treatment from then on based on manual therapy.	1	✓	✗	✓	Post-operative	9	10
14	Ludwig et al.	2023	Improvement of Groin Pain in a Football Player with Femoroacetabular Impingement via a Correction of the Pelvic Position—A Case Report	Case study	19-year-old footballer with hip pain treated conservatively. Work focused mainly on correcting the anterior tilt of the pelvis.	1	✗	✗	✓	Conservative	3	1
15	Macintyre et al.	2015	Conservative management of an elite ice hockey goaltender with femoroacetabular impingement (FAI): a case report	Case study	22-year-old field hockey goalkeeper with CFA and labral lesion treated conservatively.	1	✓	✗	✓	Conservative	8	9
16	Mansell et al. (Protocole post-opératoire)	2018	Arthroscopic surgery or physical therapy for patients with femoroacetabular impingement syndrome: a randomized controlled trial with 2-year follow-up	Randomized controlled trial	Comparison of conservative and arthroscopic treatment.	80	✗ Protocol developed by Mansell and al. (2016)	✓	✗	Post-operative	5	6
	Mansell et al. (Protocole conservateur)						Protocol developed by Mansell and al. (2016)	✓	✗	Conservative	7	10
17	Müller-Torrente et al. (Groupe expérimental : réhabilitation spécifique)	2021	Benefits of a specific and supervised rehabilitation program in femoroacetabular impingement patients undergoing hip arthroscopy: a randomized control trial	Randomized controlled trial	Evaluation of benefits of specific vs standard physiotherapy treatment. Outcomes: FADIR/FABER test, joint range of motion (ROM), pain, modified Harris Hip score (mHHS).	94	✓	✗	✓	Post-operative	7	9
	Müller-Torrente et al. (Groupe contrôle : réhabilitation standard)						✓	✗	✓	Post-operative	7	9
18	Narveson et al. (Protocole de mobilisation)	2018	Conservative treatment continuum for managing femoroacetabular impingement syndrom and acetabular labral tears in surgical candidates: a case series	Case series	Comparison of two conservative physiotherapy treatments: three subjects with a protocol based on mobilization and three subjects with a protocol based on neuromuscular control.	6	✓	✗	✓	Conservative	2	6
	Narveson et al. (Protocole de contrôle neuromusculaire)					6	✓	✗	✓	Conservative	2	6
19	Nikolova et Yordanov	2022	Conservative physiotherapy treatment of femoroacetabular impingement	Case study	45-year-old dancer, initially diagnosed with Becherrev and treated with PRP, ultrasound, injections (3) and anti-inflammatories: treatment not effective. Then diagnosed with bilateral DWI and treated with physiotherapy for conservative therapy.	1	✓	✗	✓	Conservative	2	3

20	Parvaresh et al.	2021	High rate of return to tennis after hip arthroscopy for patients with femoroacetabular impingement syndrome	Retrospective analysis	Evaluation of return to sport (RTS) in tennis athletes after hip arthroscopy for DWI treatment.	28	* Protocol developed by Kuhns and al. (2017)	✓	*	Post-operative	3	5
21	Simunovic et al.	2018	Femoroacetabular impingement randomised controlled trial (FIRST) - a multi-centre randomized controlled trial comparing arthroscopic lavage and arthroscopic osteochondroplasty on patient important outcomes and quality of life in the treatment of	Randomized controlled trial (multicentric)	Evaluation of the effect of arthroscopic lavage versus osteochondroplasty in adults with DWI. Pain reduction and improved quality of life at 12 months.	220	* Protocol developed by Spencer-Gardner and al. (2014)	✓	*	Post-operative	4	6
22	Todd et al.	2020	Resolving anterior hip pain in a young male footballer following arthroscopic surgery for femoroacetabular impingement syndrome: a case report	Case study	22-year-old footballer with bilateral operated CFA presenting residual pain at 12 months post-op. Physiotherapy treatment based on neuromotor control (spino-pelvic complex and hip), soft-tissue treatment, ...	1	✓	*	✓	Post-operative	2	4
23	Weber et al.	2020	Return to sport after hip arthroscopy for femoroacetabular impingement syndrome in NCAA division I athletes: Experience at a single institution	Case series	Evaluation of return to sport post hip arthroscopy for FAI, and examination of the influence of sport type on the clinical presentation of FAI in university athletes.	39	✓	✓	*	Post-operative	1	1
24	Wright et al. (Protocole de thérapie manuelle et exercices spécifiques)	2016	Non-operative management of femoroacetabular impingement: a prospective, randomized controlled clinical trial pilot study	Randomized controlled trial (prospective pilot study)	Comparison of efficacy between conservative treatment with standard physiotherapy vs manual therapy and specific exercises. Outcomes: pain and function.	7	✓	*	✓	Conservative	8	11
	Wright et al. (Protocole standard)					8	✓	*	✓	Conservative	7	11
25	Wright et Hegedus	2012	Augmented home exercise program for a 37-year-old female with a clinical presentation of femoroacetabular impingement	Case study	Description of therapeutic interventions in a 37-year-old female patient with clinical signs and symptoms consistent with femoroacetabular impingement.	1	✓	*	✓	Conservative	5	6

Appendix 3 Protocol Characteristics

N°	Author(s)	Year	Title	Design	Abstract	Number of weeks treatment	Total number of sessions	Supervision	Number of supervised sessions	Specifying the number of series	Specifying the number of repetitions	Unsupervised home program	Material(s)	Adapting exercises	Progress criteria	Exercise goals	Program adherence evaluation method
1	Abdelkader et al.	2023	Olympic fencer with femoroacetabular impingement syndrome uses active rehabilitation to avoid surgery: A case report	Case study	Fencer with femoroacetabular impingement (FAI) and diaphragmatic dysfunction, treated conservatively before the Olympic Games.	8	N/5	✓	8	✓	✓	✓	✖	N/A	✓	✓	✖
2	Bennell et al.	2017	Efficacy of adding a physiotherapy rehabilitation programme to arthroscopic management of femoroacetabular impingement syndrome: a randomised controlled trial (FAIR)	Randomized controlled trial	Tests the efficacy of a progressive rehabilitation program vs. no physiotherapy treatment in the post-operative period.	12	6	✓	6	✓	✓	✓	✓	✓	✓	✓	Self adherence 8,3/10
3	Casartelli et al.	2019	Exercise Therapy for the Management of Femoroacetabular Impingement Syndrome: Preliminary Results of Clinical Responsiveness	Case series	Tests the effectiveness of post-operative physiotherapy	12	48	✓	24	✓	✓	✓	✖	✓	✓	✓	Logbook > or = at 80% attendance at
4	Cerrahoglu et Durgun	2020	Bilateral femoroacetabular impingement syndrome: a case report	Case study	Patient underwent back surgery instead of hip treatment, conservative treatment for FAI with good results.	N/5	N/5	✓	15	✖	✖	✖	✖	N/A	✖	✖	✖
5	Di Benedetto et al.	2021	Outcomes in arthroscopic surgery and proposal rehabilitative treatment in femoral acetabular impingement syndrome	Case series	Tests the effectiveness of a multimodal physiotherapy rehabilitation program (exercise, manual therapy and hydrotherapy) for post-operative follow-up.	6	19x45 minutes	✓	19	✖	✖	✖	✖	✖	✓	✓	✖
6	Domb et al.	2013	Surgical dislocation of the hip versus arthroscopic treatment of femoroacetabular impingement: a prospective matched-pair study with average 2 year follow-up	Matched pair cohort study	Comparison between dislocation surgery and arthroscopy. Outcomes: preoperative vs. postoperative alpha angle, patient-related outcomes, arthritic development at 2 years postoperatively.	N/5	N/5	N/5	N/5	✖	✖	✖	✓	✖	✖	✖	✖
7	Emara et al.	2011	Conservative treatment for mild femoroacetabular impingement	Case series	Early results of conservative treatment, mainly based on lifestyle modification	108 to 120	N/5	✓	N/5	✖	✖	✓	✖	✖	✓	✓	✖
8	Gao et al.	2020	Outcomes of hip arthroscopy for femoroacetabular impingement in chinese patients aged 50 years or older	Case series	Hip arthroscopy in patients over 50 years of age, 2-year results.	12	N/5	N/5	N/5	✖	✖	✖	✖	✖	✖	✖	✖
9	Grant et al. (Protocole préopératoire)	2017	The MAP* hip arthroscopy pre-habilitation intervention study: does pre-habilitation affect outcomes in patients undergoing hip arthroscopy for femoro-acetabular impingement?	Randomized prospective comparative controlled pilot study	To determine whether patient-specific exercises performed preoperatively of hip arthroscopy for femoroacetabular impingement affected postoperative recovery.	8	N/5	✓	N/5	✖	✓	✖	✖	✖	✖	✓	Daily diary to be filled in after exercises
	Grant et al. (Protocole post-opératoire)				Comparison between a group receiving a home-based program before surgery and a group receiving no	12	N/5	✓	N/5	✖	✓	✖	✓	✓	✖	✓	Daily diary to be filled in after exercises
10	Griffin et al.	2022	Arthroscopic hip surgery compared with personalised hip therapy in people over 16 years old with femoroacetabular impingement syndrome: UK FASInk RCT	Randomized controlled trial (multicentric)	Comparison of arthroscopic and conservative treatment.	12 to 24	N/5	✓	6 to 10	✖	✖	✓	✓	✓	✓	✓	Exercise diary completed by physiotherapist.
11	Guenther et al.	2017	Arthroscopic hip surgery compared with personalised hip therapy in people over 16 years old with femoroacetabular impingement syndrome: UK FASInk RCT	Randomized controlled pilot study	Evaluating the effectiveness of a pre-operative muscle-strengthening program.	10	40	✓	5	✓	✓	✓	✓	✓	✓	✓	Weekly exercise diary
12	Kemp et al. (Protocole de renforcement spécifique)	2018	The Physiotherapy for Femoroacetabular Impingement Rehabilitation Study (physioFIRS): A Pilot Randomized Controlled Trial	Randomized controlled pilot study	Comparison of two physiotherapy treatments: a program targeting specific strengthening and a control group based on stretching.	12	44	✓	20	✓	✓	✓ With the help of the physitrack application or paper diary	✓	✓	✓	✖	Weekly questionnaire and "Physitracks" application
	Kemp et al. (Protocole du groupe contrôle)					12	44	✓	20	✓	✓	✓ With the help of the physitrack application or paper diary	✓	✖	✓	✖	Weekly questionnaire and "Physitracks" application
13	LeBeau et Nho	2014	The use of manual therapy post-hip arthroscopy when an exercise-based therapy approach has failed: a case report	Case study	Patient with abnormal, persistent pain at 13 weeks post-op. Treatment from then on based on manual therapy.	16	N/5	✓	12	✓	✓	✓	✖	N/A	✓	✓	✖
14	Ludwig et al.	2023	Improvement of Groin Pain in a Football Player with Femoroacetabular Impingement via a Correction of the Pelvic Position—A Case Report	Case study	19-year-old footballer with hip pain treated conservatively. Work focused mainly on correcting the anterior tilt of the pelvis.	8	24	N/5	N/5	✓	✓	✓	✖	N/A	✖	✓	✖
15	MacIntyre et al.	2015	Conservative management of an elite ice hockey goaltender with femoroacetabular impingement (FAI): a case report	Case study	22-year-old field hockey goalkeeper with CFA and labral lesion treated conservatively.	6	8	✓	8	✓	✓	✖	✓	N/A	✓	✓	✖
16	Mansell et al. (Protocole post-opératoire)	2018	Arthroscopic surgery or physical therapy for patients with femoroacetabular impingement syndrome: a randomized controlled trial with 2-year follow-up	Randomized controlled trial	Comparison of conservative and arthroscopic treatment.	24 (noted in text) 55days (in appended protocol)	5 until D49 then 3-5x/week individual and every 2 weeks supervised	✓	7 until D49 then every 2 weeks (total n=14)	✓	✓	✓	✓	✓	✓	✓	Self intervention inventory (40 items)
	Mansell et al. (Protocole conservateur)					12	N/5	✓	24x5minutes	✓	✓	✓ To continue rehabilitation after 6 months	✓	✓	✖	✖	Self intervention inventory (40 items)
17	Müller-Torrente et al. (Groupe expérimental : réhabilitation spécifique)	2021	Benefits of a specific and supervised rehabilitation program in femoroacetabular impingement patients undergoing hip arthroscopy: a randomized control trial	Randomized controlled trial	Evaluation of benefits of specific vs standard physiotherapy treatment.	14	N/5	✓	7x5minutes	✓	✓	✓	✓	✓	✓	✓	Self-completed exercise diary
	Müller-Torrente et al. (Groupe contrôle : réhabilitation standard)				Outcomes: FADIR/FABER test, joint range of motion (ROM), pain, modified Harris Hip score (mHHS).	14	N/5	✓	7x5minutes	✓	✓	✓	✓	✓	✓	✓	Self-completed exercise diary
	Narveson et al. (Protocole de mobilisation)		Conservative treatment continuum for managing		Comparison of two conservative physiotherapy	N/5	N/5	✓	N/5	✖	✖	✖	✖	✖	✓	✖	✖

18	Narveson et al. (Protocole de contrôle neuromusculaire)	2018	femoroacetabular impingement syndrom and acetabular labral tears in surgical candidates: a case series	Case series	treatments: three subjects with a protocol based on mobilization and three subjects with a protocol based on neuromuscular control.	N/5	N/5	✓	N/5	✖	✖	✖	✖	✖	✓	✖	✖
19	Nikolova et Yordanov	2022	Conservative physiotherapy treatment of femoroacetabular impingement	Case study	45-year-old dancer, initially diagnosed with Becherev and treated with PRP, ultrasound, injections (3) and anti-inflammatories: treatment not effective. Then diagnosed with bilateral DWI and treated with physiotherapy for conservative therapy.	40	N/5	✓	N/5	✓	✓	✓	✓	N/A	✖	✓	✖
20	Parvaresh et al.	2021	High rate of return to tennis after hip arthroscopy for patients with femoroacetabular impingement syndrome	Retrospective analysis	Evaluation of return to sport (RTS) in tennis athletes after hip arthroscopy for DWI treatment.	16 to 18	N/5	N/5	N/5	✖	✖	✓	✓	✖	✓	✓	✖
21	Simunovic et al.	2018	Femoroacetabular impingement: randomised controlled trial (FIRST) - a multi-centre randomized controlled trial comparing arthroscopic lavage and arthroscopic osteochondroplasty on patient important outcomes and quality of life in the treatment of young adult (18-50 years) femoroacetabular impingement : a statistical analysis plan	Randomized controlled trial (multicentric)	Evaluation of the effect of arthroscopic lavage versus osteochondroplasty in adults with DWI. Pain reduction and improved quality of life at 12 months.	N/5	max 36	N/5	N/5	✖	✖	✖	✖	✓	✓	✓	✖
22	Todd et al.	2020	Resolving anterior hip pain in a young male footballer following arthroscopic surgery for femoroacetabular impingement syndrome: a case report	Case study	22-year-old footballer with bilateral operated CFA presenting residual pain at 12 months post-op. Physiotherapy treatment based on neuromotor control (spino-pelvic complex and hip), soft-tissue treatment, ...	5	9 (5 during the first 5 weeks, then 4 at 2-month intervals each time)	✓	5	✓	✓	✖	✖	N/A	✓	✖	✖
23	Weber et al.	2020	Return to sport after hip arthroscopy for femoroacetabular impingement syndrome in NCAA division I athletes: Experience at a single institution	Case series	Evaluation of return to sport post hip arthroscopy for FAI, and examination of the influence of sport type on the clinical presentation of FAI in university athletes.	24	N/5	N/5	N/5	✖	✖	✖	✖	✖	✖	✓	✖
24	Wright et al. (Protocole de thérapie manuelle et exercices spécifiques)	2016	Non-operative management of femoroacetabular impingement: a prospective, randomized controlled clinical trial pilot study	Randomized controlled trial (prospective pilot study)	Comparison of efficacy between conservative treatment with standard physiotherapy vs manual therapy and specific exercises. Outcomes: pain and function.	6	12	✓	12	✓	✓	✓	✓	✖	✓	✓	✖
	Wright et al. (Protocole standard)					6	0	✖	0	✓	✓	✓	✖	✖	✖	✖	✖
25	Wright et Hegedus	2012	Augmented home exercise program for a 37-year-old female with a clinical presentation of femoroacetabular impingement	Case study	Description of therapeutic interventions in a 37-year-old female patient with clinical signs and symptoms consistent with femoro-acetabular impingement.	12	8	✓	8	✓	✓	✓	✖	N/A	✖	✓	Explanation by the patient at each session of the progress or otherwise she has observed

