Priority Topics and Key Features for the Assessment of Competence in Sport and Exercise Medicine

This collection of priority topics and key features for assessment was developed by the College of Family Physicians of Canada (CFPC) Working Group on the Assessment of Competence in Sport and Exercise Medicine from 2013 to 2016. It outlines what to assess to determine competence at the enhanced skills level, following the CFPC's traditional approach of developing priority topics, procedures, and their key features.

The goal of these priority topics and key features is to guide the assessment of competencies required for awarding Certificates of Added Competence (CAC), both for residents in enhanced skills programs and for practice-eligible candidates, and to inform curriculum and training development.

When using this document, it is critical to remember that the priority topics and key features listed are not meant to be an exhaustive scope of practice in sport and exercise medicine, nor do they represent a checklist for the determination of competence. They represent a guide to focus the sampling of performance. When trainees consistently demonstrate most of the key features across a good sample of the priority topics, it can be inferred that they have competence in sport and exercise medicine.

It is beyond the scope of this document to list the competencies expected for every musculoskeletal condition encountered, so overarching principles with representative examples were created. The principles applied to these subtopics apply to all musculoskeletal conditions encountered in any joint, and are not exclusive.

It is also important to bear in mind that, because there is a great overlap between crucial competencies that are required for different priority topics, the tendency was to avoid repetition and list key features selectively.

Successful candidates for a Certificate of Added Competence in Sport and Exercise Medicine are expected to have demonstrated core competence in family medicine, including the Six Essential Skills and Procedures.

The order of the appearance of the priority topics listed does not reflect the frequency in which the topics appeared in the validation of the topics, but rather a logical sequence in which they would be dealt with in a clinical environment.

Finally, this is a living document that will be regularly revisited and updated to ensure its relevance.

How the priority topics and key features were developed

The Working Group on the Assessment of Competence in Sport and Exercise Medicine (5 members) acted as the nominal group, generating an initial list of priority topics through an individual survey followed by group discussion and consensus. A survey to a larger group of family practitioners (194 recipients at a 15% response rate), representative of physicians from across the country, generated another independent list.

The lists of priority topics generated by the nominal group and the larger reference group were almost identical, both in the topics named and the priorities assigned, with a strong positive correlation of 0.86. A final list of 17 priority topics was identified.

Key features were developed and finalized for all topics using the nominal group technique, which included four iterations of individual comments, discussions and consensus building.

How to use the priority topics and key features

It is important to note that materials in this booklet are intentionally selective and not comprehensive. It is most desirable and useful to assess what will best discriminate between competent and less competent individuals. Priority topics do not represent an extensive list of topics that should be covered in training, but rather a selective list of areas for assessment that can help teachers/assessors to infer overall competence in sport and exercise medicine. Key features represent the critical or essential steps in the resolution of a clinical situation or problem, so the achievement of underlying competencies can be inferred. All key features refer to observable actions, not knowledge. They do not cover all necessary steps (e.g., history, physical examination, diagnosis, management), but only those that are critical and most likely to be missed.

As such, the priority topics and their features are not meant to be used in a checklist approach when assessing competence. They are best used for guiding assessment efforts (sampling, observation, reflection) over time to build a case for overall competence or the lack thereof. They may also be useful in the following situations:

For trainees:

- Use as a guide for self-reflection on competence and development of a learning plan, particularly prior to and during clinical experiences
- Use as a guide for soliciting feedback from teachers/assessors

For teachers/assessors:

- Compare and contrast materials in this document with your assessment strategies and adjust as necessary
- Use as a guide assessment of your trainees, including soliciting feedback, developing questions to ask trainees, and completing field notes
- Use as a guide to help develop learning plans for your trainees
- Use as a self reflection guide to assess your teaching

For programs:

- Use as assessment standards when making decisions about residents' successful completion of training
- Use as a guide to develop assessment strategies
- Use as a guide to plan curriculum that can adequately expose trainees to the priority topics and procedures

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Priority Topics

1. Musculoskeletal conditions
    a) Localized or regional musculoskeletal pain of undetermined etiology
    b) Localized or regional musculoskeletal pain with a diagnosed etiology
    c) The injured knee (without obvious fractures)
    d) The shoulder that is painful or unstable (not an acute injury)
    e) Ankle sprains
    f) Hip and groin pain (non-acute)

2. Concussion
3. Exercise, rehabilitation, and return to physical activity (post-injury or illness; setting limitations)
4. Medical and environmental issues related to exercise
5. Diagnostic and medical imaging
6. Injections and aspirations of joints and soft tissues
7. Competitive/elite athletes
8. Exercise prescription (adapted to specific populations for health promotion and prevention)
9. On-field intervention (includes sideline)
10. Coaches/parents/teachers
11. Nutrition/supplements/doping)
12. Arthropathy (mono- and polyarthropathy, particularly osteoarthritis)
13. Sex-specific issues
14. Pediatric/adolescent population
15. Competitive and recreational athletes with a disability (physical, developmental, or intellectual)
16. Event management
17. Exercise: Pre-activity assessment

Required Procedural Skills:

Inject or aspirate the following joints/regions:

- Joints: shoulder (e.g., glenohumeral, acromioclavicular, subacromial), knee, ankle, small joint (e.g., first metatarsophalangeal)
- Soft tissues:
    - Bursa (e.g., olecranon, calcaneal, greater trochanter, pes anserine)
    - Peritendinous (e.g., de Quervain's, trigger finger)
    - Enthesis (e.g., epicondylosis, plantar fascia)
    - Trigger points

Priority Topic 1a: Localized or regional musculoskeletal pain of undetermined etiology

1. For a patient presenting with localized or regional musculoskeletal pain of undetermined etiology:
   a) Use a patient-centred approach to consider and assess all potential sources of local, referred, and systemic pain (e.g., low back pain from pelvic pathology, bone pain from osteomyelitis, shoulder pain from pulmonary lesion)
   b) Look for and recognize atypical signs and symptoms that could indicate more serious pathology
   c) Order investigations based on the differential diagnosis and the impact on management

2. For a patient presenting with acute musculoskeletal pain of undetermined origin during a sporting event or physical activity:
   a) Determine and communicate the potential risks of continued play/activity
   b) Remove the patient from play/activity when medically indicated
   c) Counsel the patient about safe return to play/activity

Priority Topic 1b: Localized or regional musculoskeletal pain with a diagnosed etiology

1. For a patient presenting with musculoskeletal pain with a diagnosed etiology (e.g., fracture, radiculopathy) look for and identify signs and symptoms suggestive of associated serious pathology (e.g., pathologic fracture, cardiac cause, lung tumour) and manage as indicated.

2. For a patient with musculoskeletal pain with a diagnosed etiology:
   a) Order additional investigations only when the results may affect the diagnosis or management
   b) Develop an appropriate initial treatment plan that includes pain control and early rehabilitation strategies (e.g., physiotherapy, bracing, injections)
   c) Determine if and when a medical/surgical referral is indicated (e.g., rheumatoid arthritis, locked knee) or not (e.g., degenerative meniscal tear, degenerative rotator cuff tear) and initiate a timely referral
   d) Develop an individualized longer-term rehabilitation plan in the context of the injury and the patient's functional objectives to optimize recovery and minimize the risk of re-injury

3. For a patient with musculoskeletal pain with a diagnosed etiology who is not improving as expected:
   a) Consider and look for other causes or factors contributing to pain (e.g., referred pain, complex regional pain syndrome, other musculoskeletal diagnosis, psychosocial issues)
   b) Re-evaluate and manage accordingly

Priority Topic 1c: The injured knee (without obvious fractures)

1. For a patient presenting with an acute knee injury without an obvious fracture, formulate a differential diagnosis by:
   - Performing a thorough history with a special focus on the mechanism of injury and mechanical symptoms (e.g., locking, instability, pop, acute swelling)
   - Examining the knee clinically with a standardized approach, including special tests
   - Distinguishing between benign and serious pathology (e.g., neurovascular injury, acute compartment syndrome)
   - Ordering appropriate imaging or investigations only if they may affect diagnosis and management

2. For a patient with an acute knee injury without obvious fracture:
   a) Determine the need for further medical/surgical intervention
   b) Distinguish whether it is urgent, semi-urgent, or elective
   c) Refer appropriately

3. For a patient with an acute knee injury without obvious fracture who does not require medical/surgical referral:
   a) Develop a comprehensive management plan (e.g., appropriate rehabilitation, bracing)
   b) Provide a modified exercise plan to maintain fitness while the injury is being managed
   c) Create a safe return-to-play plan that takes into consideration the context of the injury and the patient's functional objectives to minimize the risk of re-injury

Priority Topic 1d: The shoulder that is painful or unstable (not an acute injury)

1. For a patient presenting with a painful or unstable shoulder, formulate a differential diagnosis by:
   - Taking a thorough history, including possible causative factors (e.g., overuse, repetitive strain, work requirements, prior injuries, sport-specific risk)
   - Performing a comprehensive physical exam, including assessment of the cervical spine and appropriate special tests
   - Considering selective diagnostic investigations and/or injections (e.g., MRI arthrogram, acromioclavicular joint injection) when indicated

2. For a patient with a painful or unstable shoulder with a suspected diagnosis:
   a) Order appropriate imaging and investigations only when the results may contribute to the diagnosis or direct the treatment plan (e.g., ultrasound for rotator cuff tear)
   b) Interpret the results of imaging and investigations properly in the clinical context

3. For a patient with a painful or unstable shoulder, distinguish between benign and serious pathology (e.g., cardiac cause, lung tumour) and manage accordingly.

4. For a patient presenting with an established diagnosis for a painful or unstable shoulder, create a management plan that may include:
   - Providing comprehensive rehabilitation strategies customized to the patient's functional objectives (e.g., physiotherapy, biomechanics, core strength)
   - Providing, when indicated, injections and/or bracing, taping
   - Referring, when appropriate (e.g., surgery, neurology, physiatry)

Priority Topic 1e: Ankle sprains

1. For a patient presenting with an ankle injury suggestive of a sprain, formulate a differential diagnosis by:
   - Taking a comprehensive history with a special focus on the mechanism of injury
   - Examining the ankle with a standardized approach, including special tests
   - Considering and examining for injuries above and below the ankle (e.g., Maisonneuve fracture, peroneal nerve injury)
   - Ordering imaging/investigations only if they will affect management

2. For a patient with an ankle sprain, distinguish between benign and serious pathology (e.g., deltoid injury, syndesmosis, associated fractures) and manage according to severity and urgency.

3. For an ankle sprain that is not resolving as expected, reassess and look for other pathologies (e.g., osteochondral injury, impingement syndromes, tendinopathy, nerve injury).

4. For a patient with recurring ankle instability:
   a) Assess clinically for functional and structural abnormalities (e.g., ligament laxity, neuromuscular control)
   b) Manage appropriately

Priority Topic 1f: Hip and groin pain (non-acute)

1. For a patient presenting with non-acute hip or groin pain, formulate a differential diagnosis by:
   - Taking a comprehensive history, including contributing risk factors (e.g., Relative Energy Deficiency in Sport [RED-S], steroid use, sport-specific risk factors)
   - Performing a thorough physical exam of the hip, lumbar spine, and pelvis, including special tests and functional evaluation (e.g., gait analysis, one-legged squat)
   - Recognizing and looking for multiple causes of hip and groin pain, including systemic, intra-articular, soft tissue, visceral, referred (e.g., sport hernia, labral tears, osteoarthritis, ovarian cyst)
   - Ordering appropriate imaging/investigations or diagnostic injections (e.g., X-ray, bone scan, MRI arthrogram, etc.) in a timely manner, consistent with the urgency of the pathology and the impact on management

2. For a patient with non-acute hip or groin pain:
   a) Distinguish between benign and serious pathology (e.g., avascular necrosis, slipped capital femoral epiphysis, septic hip, stress fracture)
   b) Determine the need for urgent, semi-urgent, or elective medical/surgical care and refer appropriately

3. For a patient with a diagnosed etiology for non-acute hip or groin pain, establish a comprehensive patient-specific management/rehabilitation plan that also addresses underlying or precipitating factors and functional goals.

Priority Topic 2: Concussion

1. In a patient who may have sustained one or multiple impacts, collisions, or falls, consider the diagnosis of concussion even if there was no loss of consciousness.

2. For a patient with a suspected concussion on the field, evaluate appropriately, including:
   - Evaluating and stabilizing the cervical spine, as appropriate
   - Administering appropriate neurological and cognitive examinations
   - Removing the person from play and providing further evaluation on the sideline or off the field
   - Providing serial evaluations and monitoring for deterioration
   - Recognizing "red flags" and the need for urgent referral, when indicated

3. For a patient with a confirmed concussion on the field, initiate appropriate management and follow-up.

4. When assessing and managing a concussed patient in a non-acute context (e.g., office setting):
   a) Obtain a detailed history and perform a thorough evaluation, including:
      - Self-report of symptoms
      - Physical (including cervical spine), neurological, and cognitive examination
      - Special tests (e.g., vestibulo-ocular examination, balance testing)
   b) Order investigations only if they will affect management
   c) Provide counselling on initial age-appropriate management strategies (e.g., initial rest and gradual return to cognitive and physical activity)
   d) Determine readiness for return to play

5. For an athlete with persistent symptoms, create an individualized management plan that includes:
   - Strategies to remain fit and active
   - A multidisciplinary approach (e.g., physiotherapy, neuropsychology)

Priority Topic 3: Exercise, rehabilitation, and return to physical activity (post-injury or illness; setting limitations)

1. For an injured patient, prescribe an initial injury-specific management plan, including exercises/activities to avoid and those to continue while giving the injury time to heal and maintaining fitness.

2. For a patient with a resolving injury, plan a graded, patient-specific rehabilitation program and reassess periodically until full, unrestricted activity is possible.

3. When making a return-to-activity/-play decision for a patient after an injury, consider:
   - The patient's general and functional capacity (e.g., strength, balance, mobility)
   - The state of the injury itself (e.g., stability, range of motion, swelling, pain)
   - The nature and risk of the activity/sport

4. For a patient with an acute or resolving illness (e.g., infectious mononucleosis, myocarditis, heat illness, respiratory infection):
   a) Identify clinical signs and symptoms (e.g., fever, enlarged spleen, limited cardiopulmonary function) that may affect their capacity for physical activity or increase the risk of adverse events
   b) Plan serial reviews (e.g., clinical assessment, diagnostic investigations) to ensure that the clinical indicators of risk have regressed
   c) Plan a graduated return to activity/sport program adapted to the illness and the patient's well-being
   d) Counsel the patient and relevant stakeholders about risks and management decisions

Priority Topic 4: Medical and environmental issues related to exercise

1. For a patient presenting with a diagnosed medical condition (e.g., asthma, diarrhea, gastroesophageal reflux disease, headache, skin lesions), consider that exercise may induce or aggravate their symptoms and plan accordingly.

2. For a patient presenting with non-specific or atypical symptoms (e.g., mood changes, weakness, fatigue, decreased performance, multiple injuries), consider overtraining and RED-S in your differential diagnosis and assess appropriately.

3. When exercise is planned in conditions of environmental stress (e.g., heat, cold, altitude), use current best practice recommendations/established guidelines to provide advice on measures to reduce the related risk of consequences or complications:
   - To individuals and teams on:
     - Modifications of training schedules
     - Additional support activities and resources
     - Warning signs of illness
   - To event management staff on:
     - Recommended resources that should be in place to detect and treat acute environmental illness when/if it occurs
     - Identifying when risks are sufficiently high to recommend modification or cancellation of activities

4. For patients exercising in conditions of environmental stress (e.g., heat, cold, altitude, underwater), look for and recognize early signs and symptoms of environmental illness.

5. When you have identified clinical signs of environmental stress–related illness, manage promptly in the field to reduce morbidity and mortality.

6. For patients with medical conditions (e.g., asthma, diabetes, cardiovascular disease, certain medications) that may be affected by exercise in conditions of environmental stress, provide advice on setting limits or on modifications to the planned exercise to reduce the risk of complications.

Priority Topic 5: Diagnostic and medical imaging

1. For a patient presenting with a musculoskeletal issue and a clinically established differential diagnosis:
   a) Choose appropriate imaging based on the differential diagnosis and the impact it will have on management to avoid unnecessary investigations
   b) Recognize that specific views and imaging techniques may be necessary to assess for specific/suspected diagnoses (e.g., clenched fist, standing tunnel, dynamic ultrasound) and order appropriately
   c) View and interpret plain X-rays when available

2. For a patient with abnormal findings on any imaging:
   a) Interpret the findings in the context of the clinical presentation (e.g., degenerative meniscus tears in a patient with osteoarthritis)
   b) "Treat the patient, not the image"

Priority Topic 6: Injections and aspirations of joints and soft tissues

This topic refers to technical ability, using the general Key Features for procedure skills (Appendix) for all injections or aspirations.

These principles apply to any injection/aspiration of joints (small or large) and soft issues (e.g., peri-tendon, bursa, trigger points).

1. In a patient for whom a specific joint or soft tissue injection or aspiration is considered, assess for absolute or relative contraindications (e.g., allergy, diabetes, coagulation deficit, allergy) to avoid injections for which the risks outweigh the benefits.

2. When performing a joint or soft tissue injection or aspiration:
   - Select the type and amounts of injection materials (e.g., local anesthetic, cortisone viscosupplementation) whose activity profiles best respond to the location and desired effects (e.g., pain relief, anti-inflammatory)
   - Locate and use the landmarks that guide the injection or aspiration to the desired location
   - Use an appropriate sterile or "no-touch" technique

3. Following a joint aspiration for diagnostic purposes:
   a) Request the appropriate analyses for the suspected diagnoses
   b) Interpret the results (e.g., crystal arthropathy, septic arthritis)

4. Look for and recognize indications for advanced injection techniques you are not able to perform (e.g., sympathetic block, facet block, epidural) and refer appropriately.

Priority Topic 7: Competitive/elite athletes

1. For a competitive/elite athlete with a diagnosed musculoskeletal injury or medical illness (acute or chronic), manage in a timely fashion using a patient-centred approach while considering:
   - Personal/external expectations and pressures
   - Individual and sport-specific risks
   - Relative/absolute contraindications for return to play
   - Training/competition schedules

2. For an athlete who has been advised but is reluctant to stop or modify training, use a patient-centred approach to address personal fears, goals/expectations, and external pressures to facilitate an acceptable management plan while also maintaining an effective doctor–patient relationship.

3. For all competitive/elite athletes, consider selective interventions (e.g., taping, bracing, medication, injection) to facilitate training or competition, provided that risks and benefits are properly discussed and that such an intervention is unlikely to result in further significant injury or a doping infraction.

4. For a competitive/elite athlete with an acute or chronic medical issue (e.g., upper respiratory infection, asthma, diabetes), determine and discuss with the athlete:
   - Potential risks of exercising with the specific condition
   - Potential effects of the illness on training and performance

5. For athletes travelling for sport, recognize factors/conditions that may affect their health or performance (e.g., jet lag, immunization, altitude, food, water, personal safety), and counsel the athletes/teams on strategies to mitigate negative effects and risks.

Priority Topic 8: Exercise prescription (adapted to specific populations for health promotion and prevention)

1. Before prescribing exercise to any patient, assess for factors that may influence choices and participation (e.g., age, previous injuries, motivation, pregnancy, psychosocial context, coexistent medical problems, cardiovascular risk).

2. For healthy and low-risk patients, generate an exercise prescription tailored to their context, current activity levels, and personal goals to promote and maintain a healthy lifestyle.

3. When prescribing exercise for patients with chronic diseases (e.g., coronary artery disease, asthma, diabetes):

    a) Generate individualized exercise recommendations and counsel regarding "red flags" while exercising

    b) Identify patients at high risk for whom exercise would best be done in a specialized/monitored setting (e.g., post-cardiovascular surgery)

4. For a patient with acute or chronic musculoskeletal injuries or conditions, generate an exercise prescription that minimizes any negative impact on the affected areas (e.g., progression of osteoarthritis, aggravation of the injury) and maximizes the positive effects.

Priority Topic 9: On-field intervention (includes sideline)

The following are starting points for all Key Features when providing on-field medical coverage.

1. Implement the established on-field, sport-specific, and venue-specific emergency action plan, including safe access to the field of play, management of medical emergencies and injuries, and safe patient removal.

2. Use an approach to the management of non-orthopedic trauma that is adapted to the on-field context (e.g., suturing, eye injuries, dental injuries).

3. Diagnose common on-field injuries (e.g., sprains, dislocations, fractures, soft tissue injuries) and provide initial management (e.g., reductions, bracing/immobilization) in an on-field context.

4. Arrange for appropriate disposition of the injured patient based on the injury or illness (e.g., urgent/emergent transport to hospital, sideline care and observation, return to play).

Priority Topic 10: Coaches/parents/teachers

The following Key Features refer to dealing with coaches, parents, teachers, and athletes, including situations in which the athlete may face external or self-inflicted pressure to participate in or return to an activity.

1. Make recommendations for activity that are based only on best practices and the best interests of the patient (i.e., ensure patient safety and well-being).

2. Develop a management plan with all parties that will:
   - Ensure that an injured or ill athlete will not return to play until it is safe to do so
   - Optimize the chances that they will be able to resist external or self-inflicted pressures

3. Use high-level skills (i.e., those that foster a patient-centred approach, communication, and a strong physician–patient relationship) to enhance the likelihood that the recommended management plan will be followed by:
   - Respecting privacy and obtaining the patient's consent before discussing the plan with others
   - Seeking an insightful resolution of conflict between different parties regarding the management recommendations
   - Addressing the concerns of all parties by actively engaging them in the agreed-upon management plan

4. Educate the athlete, coaches, parents, and teachers on:
   - Injury-prevention strategies
   - Early recognition of injuries or illness
   - Appropriate early management

Priority Topic 11: Nutrition/supplements/doping

1. For a patient who may benefit from advice on proper nutrition and hydration, provide recommendations based on a review of:
   - Medical history
   - Dietary and fluid intake
   - Sport-specific and individualized needs
   - Strategies to optimize performance (training, competition, recovery)
   - Risk reduction (e.g., energy deficiency, hyponatremia)

2. For competitive athletes:
   a) Counsel them on the risks of supplements and doping with respect to overall health and performance
   b) Identify the use of medications and supplements that might result in doping infractions, in accordance with current regulations
   c) Identify substances the athlete is taking that require a therapeutic use exemption and initiate the appropriate steps for a proper application to the relevant sport authority

Priority Topic 12: Arthropathy (mono- and polyarthropathy, particularly osteoarthritis)

1. For a patient presenting with joint pain and/or swelling:
    a) Look for and recognize the signs and symptoms of infectious or inflammatory mono- or poly-arthropathy
    b) Investigate appropriately (e.g., bloodwork, joint aspiration, imaging) while considering the impact on management
    c) Manage and/or refer appropriately

2. For a patient with degenerative and/or inflammatory joint symptoms, incorporate relevant history, physical findings, and imaging to:
    a) Establish the diagnosis and severity of the disease
    b) Determine the functional impact on daily and leisure activities as a potential source of gradual deconditioning and subsequent loss of autonomy

3. For a patient with osteoarthritis or other arthropathies, provide education to improve self-management and outcomes by:
    - Helping the patient understand the importance of symptomatic control, preventive strategies, and maintenance of a healthy, active lifestyle and diet
    - Helping the patient select proper activities, walking assistive devices, and rehabilitation strategies to maintain or improve function and autonomy
    - Recognizing when self-managed treatment is not effective and when further medical intervention is needed

4. For a patient affected by osteoarthritis or other arthropathies, establish and implement an individualized management plan based on common goals and considering current guidelines, treatment options (non-surgical and surgical), and available resources.

Priority Topic 13: Sex-specific issues

1. For an athlete presenting with unexplained non-specific symptoms or signs (e.g., change in performance, menstrual dysfunction, testosterone deficiency symptoms, fatigue and low energy, presenting stress fracture):
   a) Evaluate/investigate to create a differential diagnosis
   b) Include the female athlete triad/RED-S in the differential diagnosis for female athletes

2. For an athlete with diagnosed female athlete triad/RED-S, manage according to recommended guidelines (e.g., counselling about training, diet, mental health, hormonal therapy) and refer when necessary.

3. For an active patient with a diagnosis of menopause or andropause, look for and consider the impact of these conditions on training/performance and injury and counsel the patient accordingly.

4. For all pregnant patients, recognize relative/absolute contraindications to exercise (e.g., gestational diabetes, multiple pregnancy, hypertension) and prescribe a safe, individualized, and term-specific exercise plan using appropriate, current guidelines.

5. For a postpartum patient, provide education and encouragement regarding safe exercise to promote well-being, prevent injury, and maintain an adequate energy balance.

6. For a pregnant or postpartum patient presenting with a musculoskeletal injury, adapt injury management to reduce risks to the mother, fetus, or breastfeeding newborn (e.g., appropriate imaging/investigations, modified rehabilitation interventions, proper use of medications/supplements).

Priority Topic 14: Pediatric/adolescent population

1. For a pediatric/adolescent patient presenting with musculoskeletal pain or injury, always consider the unique musculoskeletal characteristics (e.g., growth plate, apophysis, stage of development) in your approach to a differential diagnosis and management.

2. For a pediatric/adolescent patient presenting with joint pain or swelling, consider and look for conditions more prevalent in this population (e.g., osteochondritis dissecans, transient synovitis, juvenile rheumatoid arthritis).

3. For a pediatric/adolescent patient participating in exercise/sport, counsel the patient, parents, and coaches where appropriate about age-specific exercise (e.g., appropriate strength and endurance training) to:
   - Avoid injury/illness related to musculoskeletal and physiological immaturity
   - Enhance performance
   - Enhance rehabilitation and return to play

4. For all pediatric/adolescent patients, inquire where appropriate about their level of physical activity and counsel to promote a healthy active lifestyle, proper nutrition, and energy balance.

5. For pediatric/adolescent patients, look for and recognize the signs and symptoms of potential harassment and abuse in sport (e.g., over-expectations of parents/coaches, peer pressure, mental/verbal/sexual abuse) and advocate for the patient's well-being and safety.

6. For any patient involved in a sport in which body image and weight are factors (e.g., dance, wrestling, rowing), look for and recognize the potential negative health consequences (e.g., disordered eating, altered body image, stress fractures) and manage accordingly.

Priority Topic 15: Competitive and recreational athletes with a disability (physical, developmental, or intellectual)

1. For a recreational athlete with a disability who wishes to start an exercise program or become involved in sport, assess the type, degree, and functional limitations of the disability to develop a patient-specific plan.

2. For an athlete with a disability who is participating in a competitive sport, look for and provide the resources to assist the athlete in understanding the accepted and recognized classification system that applies to their sport.

3. For all athletes with specific disabilities, anticipate and look for clinical syndromes common to their conditions (e.g., autonomic dysreflexia, atlantoaxial instability) and counsel regarding risks to minimize injury and avoid medical complications from participation in exercise or sport.

4. For an athlete with a disability, look for and recognize medical conditions associated with the specific disability (e.g., pressure sores, use of catheters) that may affect their health and performance and arrange for appropriate management.

5. For an injured or ill athlete with a disability, recognize the impact of the injury/illness on the patient's overall functional ability and adjust management accordingly (e.g., rotator cuff injury in a wheelchair athlete, stump skin infection in an amputee).

Priority Topic 16: Event management

The following points apply to all Key Features when planning for the medical coverage of an event.

1. Define the anticipated needs based on the nature of the event, location, environmental factors, and number/demographics/health risks of participants to:
   - Plan for necessary resources (e.g., medical and paramedical personnel, equipment, communication, transport) considering what is available locally
   - Establish protocols to deal with anticipated challenges (e.g., cancelling or rescheduling events, athletes with medical conditions, medical exclusion protocol)

2. Establish and disseminate clear chains of command and means of communication that will remain effective under all conditions and for the entire duration of the event.

3. Develop emergency action plans (e.g., on-field removal, mass casualty, disaster planning), assign roles, and ensure the effective communication/dissemination of this information to the event medical coverage team and the local organizing committee.

Priority Topic 17: Exercise: Pre-activity assessment

1. For an athlete or patient who asks for advice about participation in a physical activity, identify risk factors for performance issues, injury, illness, and sudden death by:
   - Completing an individualized medical and sport-specific history
   - Conducting a thorough pre-participation physical examination with attention to, and understanding of, the individual (including age, sex, and gender) and sport-specific risks

2. For an athlete or patient who has risk factors that have been identified by a full pre-activity assessment:
   a) Provide recommendations about participation, with or without restrictions
   b) Arrange appropriate follow-up investigations, rehabilitation strategies, and injury-prevention strategies when indicated

3. When assessing any athlete prior to participation in a physical activity, complete a detailed history on their use of medications/supplements and provide appropriate, individualized counselling and education on their use.

Appendix

Procedure Skills in Family Medicine[1]

Certification for independent practice requires a certain level of experiential competence: this includes the technical skills to perform a certain number of procedures. It should be remembered that it is not only the technical aspects of the individual procedures that are important. The higher levels of competence must also be assessed, as always, in the context of family medicine—the key features describe this aspect.

The General Key Features of Procedure Skills

(Apply to all procedures. These can be used to guide the development of specific evaluation tools for specific procedures.)

1. In order to decide whether or not you are going to do a procedure, consider the following:
    a) The indications and contraindications to the procedure
    b) Your own skills and readiness to do the procedure (e.g., your level of fatigue and any personal distractions)
    c) The context of the procedure, including the patient involved, the complexity of the task, the time needed, the need for assistance, and location

2. Before deciding to go ahead with the procedure:
    a) Discuss the procedure with the patient, including a description of the procedure and possible outcomes, both positive and negative, as part of obtaining their consent.
    b) Prepare for the procedure by ensuring the appropriate equipment is ready.
    c) Mentally rehearse the following:
        i. The anatomic landmarks necessary for procedure performance.
        ii. The technical steps necessary in sequential fashion, including any preliminary examination.
        iii. The potential complications and their management.

3. During performance of the procedure:
        i. Keep the patient informed to reduce anxiety.
        ii. Ensure patient comfort and safety always.

4. When the procedure is not going as expected, re-evaluate the situation, and stop and/or seek assistance as required.

5. Develop a plan with your patient for after care and follow-up after completion of a procedure.

[1]Wetmore S, Laughlin T, Lawrence K, Donoff M, Allen T, Brailovsky C, et al. Defining competency-based evaluation objectives in family medicine: Procedure skills. *Can Fam Physician*. 2012;58(7):775-780.