

Figure continues on page 2.

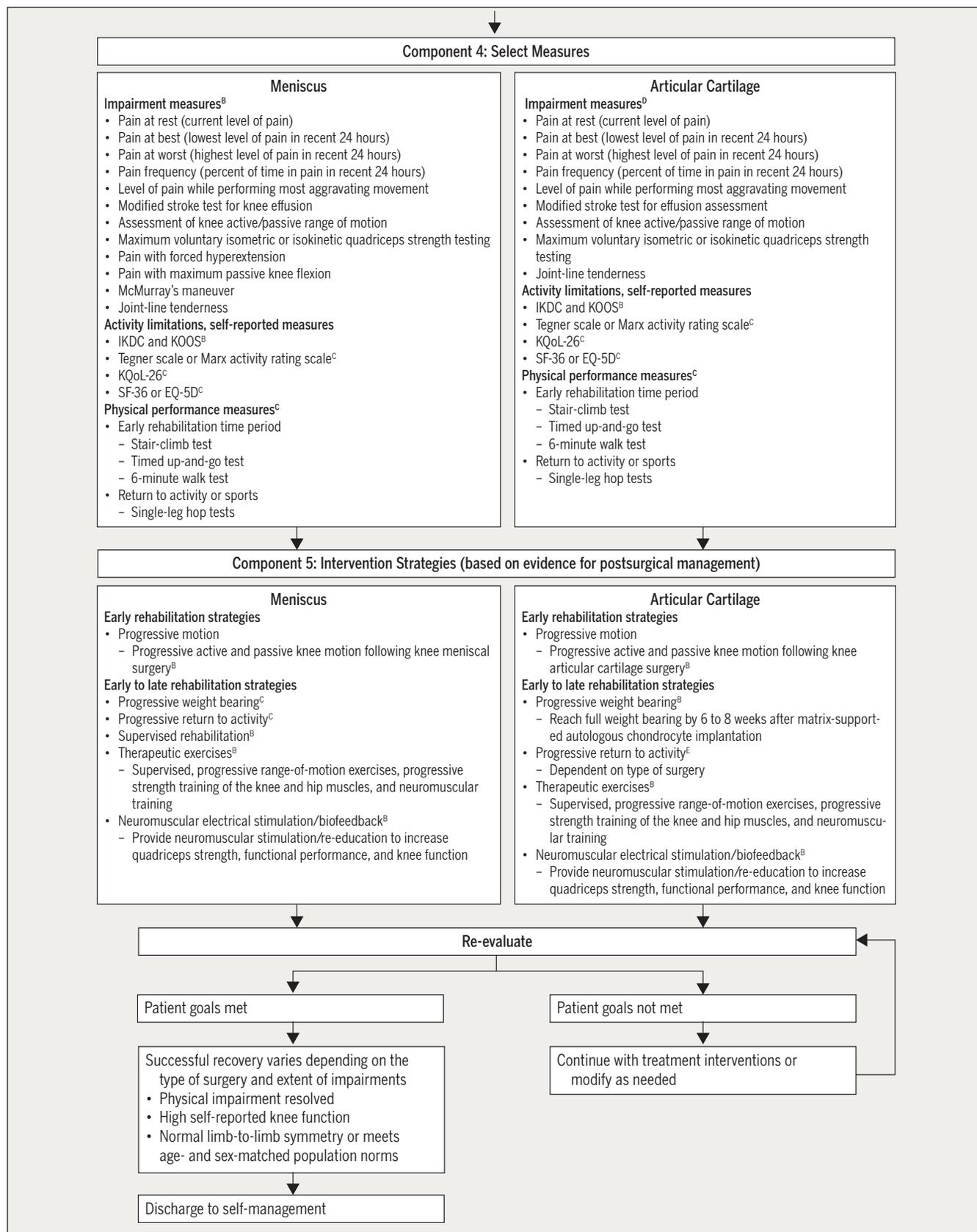
**FIGURE.** Model of diagnosis, examination, and treatment of knee pain and mobility impairments. A, guidelines based on strong evidence; B, guidelines based on moderate evidence; C, guidelines based on weak evidence; D, conflicting evidence; E, guidelines based on theoretical/foundational evidence; F, guidelines based on expert opinion.

### Decision Tree Model

A pathoanatomical/medical diagnosis of meniscus/articular cartilage lesion can provide valuable information in describing tissue pathology and may assist in nonoperative or pre-operative planning and predicting prognosis. The proposed model for examination, diagnosis, and treatment planning for patients with knee pain and mobility impairments associated with knee meniscus/articular cartilage lesions uses the following components: (1) medical screening; (2) classify the condition through evaluation of clinical findings suggestive of musculoskeletal impairments of body functioning (ICF) and associated tissue pathology/disease (ICD); (3) determination of irritability stage; (4) determination of evaluative outcome measure instruments; and (5) intervention strategies for patients with meniscus/articular cartilage lesions with respect to postsurgical care. This model is depicted in the **FIGURE**.

### Component 1

Medical screening incorporates the findings of the history and physical examination to determine whether the patient's symptoms originate from a condition that requires referral to another health care provider. The Ottawa knee rules are one example of tools that may be helpful in this decision-making process. In addition to those conditions that require a provider referral, clinicians should screen for the presence of psychosocial issues that may affect prognosis and rehabilitation treatment decision making. Psychological stress negatively influences recovery. Fear of reinjury is a frequently cited reason that athletes do not return to sport or reduce their level of physical activity.<sup>5,6</sup> Low internal health locus of control (the belief in one's ability to control one's life), lower self-efficacy, and depressive symptoms prior to surgery result in worse outcomes after ACL reconstruction.<sup>53,131</sup> Athletes who did not return to sport after ACL reconstruction had sig-



**FIGURE (CONTINUED).** Model of diagnosis, examination, and treatment of knee pain and mobility impairments. A, guidelines based on strong evidence; B, guidelines based on moderate evidence; C, guidelines based on weak evidence; D, conflicting evidence; E, guidelines based on theoretical/foundational evidence; F, guidelines based on expert opinion.

nificantly lower preoperative motivation and more negative psychological response than those who did return.<sup>7</sup> Accordingly, identifying cognitive behavioral tendencies during the patient's evaluation can direct the therapist to employ specific patient education strategies to optimize patient outcomes from physical therapy interventions and potentially provide indications for referring the patient for consultation with another medical or mental health practitioner.<sup>15</sup>

### Component 2

Differential evaluation of musculoskeletal clinical findings is to determine the most relevant physical impairments associated with the patient's reported activity limitations and medical diagnosis.<sup>79</sup> Clusters of these clinical findings are described as impairment patterns in the physical therapy literature, and are labeled according to the key impairment(s) of body function associated with that cluster. The ICD-10 and primary and secondary ICF codes associated with meniscus/articular cartilage lesions are provided in the 2010 ICF-based meniscus/articular cartilage lesions CPG.<sup>91</sup> These impairment patterns impact the selection of interventions, which focus on normalizing the key impairments of body function, which in turn improves the movement and function of the patient and lessens or alleviates the activity limitations commonly reported by the patients who meet the diagnostic criteria of that specific pattern. The **FIGURE** lists the key clinical findings used to rule in or rule out the common impairment patterns, and their associated medical conditions. Impairment-based classification is critical for matching the intervention strategy that is most likely to provide the optimal outcome for a patient's clinical findings.<sup>79</sup> However, it is important for clinicians to understand that the impairment pattern, the most relevant impairments of body function, and the associated intervention strategies often change during the patient's episode of care. Thus, continual re-evaluation of the patient's response to treatment and the patient's emerging clinical findings are important for providing optimal interventions throughout the patient's episode of care.<sup>17</sup>

### Component 3

*Irritability* is a term used by rehabilitation practitioners to reflect the tissue's ability to handle physical stress,<sup>101</sup> and is presumably related to physical status and the extent of injury

and inflammatory activity that is present. There are cases where the irritability level and the duration of symptoms do not match, requiring clinicians to make judgments when applying time-based research results to individual patients.<sup>17</sup> Diagnosis of tissue irritability is important for guiding the clinical decisions regarding treatment frequency, intensity, duration, and type, with the goal of matching the optimal dosage of treatment to the status of the tissue being treated.<sup>17,79</sup> There are other biopsychosocial elements that may relate to staging of the condition, including, but not limited to, the level of disability reported by the patient and activity avoidance.<sup>32</sup>

### Component 4

Outcome measures are standardized tools used for measuring a specific domain, whether it is a body structure or function, activity limitation, or participation restriction, or for determining a specific end point. They are important in direct management of individual patient care, and they provide the opportunity to collectively compare care and determine effectiveness through the repeated application of a standardized measurement. Outcomes in clinical practice provide the mechanism by which the health care provider, the patient, the public, and the payer are able to assess the end results of care and its effect upon the health of the patient and society. Outcome measurement can identify baseline pain, function, and disability, assess global knee function, determine readiness to return to activities, and monitor changes in status throughout treatment. Outcome measures can be classified as patient-reported outcome measures, physical performance measures, and physical impairment measures.

### Component 5

Tear pattern of the meniscus or the size of the articular cartilage lesion and clinical signs and symptoms have typically guided the clinical decision making of treatment interventions primarily for the type of surgical intervention. Interventions are listed by phase of rehabilitation (early, early to late phase). Because irritability level often reflects the tissue's ability to accept physical stress, clinicians should match the most appropriate intervention strategies to the irritability level of the patient's condition.<sup>17,79</sup> Additionally, clinicians should consider influences from psychosocial factors<sup>5-7</sup> in patients with conditions in all stages of recovery.