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Exercise Self-efficacy and Adherence: Considerations for Osteoarthritis Mitigation in Older Community Dwelling Adults

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Abstract

Although exercise is a vital health-promoting activity, regardless of health status, even when some form of chronic illness prevails, and is likely to be among the most common health recommendations offered for fostering overall health, a plethora of data reveal this recommendation is strongly associated with non -adherence to these recommendations, as in the case of their healthy counterparts. This situation, which may prevail even if the individual has adequate fiscal, personnel, and time related resources, is educated in this regard, and has the necessary skills, may seriously jeopardize efforts to minimize osteoarthritis disability, the ,most form of destructive joint disease and one involving muscle atrophy and weakness. To explain this situation, we have examined the possible role of the concept of exercise self-efficacy, and its implications for explaining exercise related anxiety, fears, fatigue, pain, motivation, and depression and failure to exercise as instructed. The presented peer reviewed data have immense implications in our view for clinicians and researchers who are seeking mitigation solutions amidst alarming predicted global increases in osteoarthritis incidence and suffering and recently discordant exercise view points.

Keywords: Adherence, Exercise, Older Adults, Osteoarthritis, Self-Efficacy, Therapeutic Strategies

Overview of the Problem

Introduction

The literature on the importance of the health benefits of exercise continues to be replete with few exceptions concerning the view of its multiple benefits anticipated by participation of the individual, whether healthy or impaired, in regular exercise. It is especially advocated for those with established chronic osteoarthritis, although commonly incurable. Since pharmacologic therapies- often recommended here for relieving adverse illness symptoms such as pain- may indeed produce undesirable side-effects if not carefully construed, and do not commonly reduce the rate of the disease progression, or disability extent in an obvious way in the absence of recommendations to adopt various forms of exercise or physical activity, participation on a consistent basis is of high clinical relevance.

In this regard, chronic disease states, such as osteoarthritis, the most common form of arthritis, are generally deemed to be progressive and may develop more intensely and extensively as far as limiting one or more functional abilities and degrees of independence over time, especially in those who are weakened physically. Commonly deemed irreversible, this disease state that largely manifests among high number of the elderly may indeed become highly debilitating, regardless of the application of palliative or passive treatment approaches.

In addition to immense bouts of pain and stiffness, and diverse forms of joint dysfunction, many older adults with osteoarthritis may suffer bouts of discouragement that can slowly diminish their life expectations and plans as well as their functional capacity in various ways. Although not life threatening, osteoarthritis at any age is cited as being among the leading causes of premature disability in the United States, and elsewhere and is a significant public health concern in most nations with aging populations [1,2] with indications of muscle weakness as a significant disease determinant [3].

Indeed, not only is the disease painful, but its presence in society clearly yields an immense costly social and economic burden [4] in-

cluding problems that can severely impact the occupational and economic well-being of the individual, as well as their families. Caused by ever present and oftentimes multiple overlapping biomechanical challenges, including alterations in neural regulation and inflammation [5] the disease commonly elicits long lasting periods of intractable pain and stiffness, aversive symptoms that often wax and wane without any predictability, as well as periods of immense fatigue, shortness of breath, weakness, day to day functional and psychosocial challenges, plus progressive physical disability. Moreover, the disease affects largely older adults which can enhance joint vulnerability in its own right and affect one or more joints incrementally or concurrently over time especially if the aging adult resorts to the many harmful side-effects of commonly used pharmaceutical strategies to allay one or more disease associated symptoms, along with the immense psychological impact of all of these disabling features, even when surgery has been forthcoming.

To this end, current researchers in the field uniformly emphasize the importance of minimizing disability and maximizing independence and life quality of the affected individual by assessing and treating both the biological as well as the psychological consequences of their condition although the mode of achieving this is often diverse and untested [6]. Most commonly targeted in this regard are four modifiable health behaviors—lack of physical activity, poor nutrition, tobacco use, and excessive alcohol consumption—behaviors responsible for much suffering, but where exercise is a global solution being increasingly favored for ameliorating knee osteoarthritis and injurious disease provoking falls, as well as obesity and declines in muscle mass [7] albeit lacking in depth and quality research endeavors [8,9]. We project exercise attributes that should be more duly acknowledged and applied with due provider belief and optimism and dosages given its many observed possible favorable impacts as listed in Table 1.

Table 1: Probable Exercise Benefits of Relevance to Osteoarthritis Mitigation.

Alleviation of anxiety/depression [10-12]
+Balance [13,14]
Bone mass metabolism [2,15]
Cognitive health [12,16]
Enhanced motor control [17]
Functional ability [16,17]
Heart health [18,19]
Loading biomechanics [20]
Mobility [17,21]
Muscle strength [13,14,22]
Pain reduction [16,21]
+Proprioception
Post Operative Recovery
Self-efficacy [23]
+ Sleep quality [24]
Weight control [18]
Wellbeing [11,25]

To add to this list, exercise or participation in physical activity may reduce frailty [10-26], and signs of inflammation [26] while heightening feelings of life satisfaction [27] and life quality [16,27,28] and satisfaction [29]. Participation in exercise may also help heighten the ability of the affected adult to carry out self-management processes including the ability to cope with unanticipated chronic illness challenges, and to enact effective adjustments that may be needed to foster their independence and autonomy. These diverse exercise benefits remain hard to verify in clinical realms, despite their promise in alleviating multiple physical, psychological, social functional disease symptom domains [30].

This mini review takes the perspective that exercise participation that is safe and tailored will greatly reduce osteoarthritis suffering and personal costs even if unproven or disputed by some. It focuses specifically however, on trying to better understand the following puzzle or conundrum that occurs widely in the exercise adoption context. That is, ample research as well as clinical experience shows that despite a multitude of substantiated benefits, it remains unclear why exercise adherence rates often advocated for the long term care of the joints and are strongly indicated at all disease stages are so poor, especially when such immense benefits have been demonstrated in response to regular physical activity participation in the presence of a prevailing chronic health condition such as osteoarthritis. In particular, the review tries to elucidate why current efforts to support exercise as osteoarthritis 'medicine' show poor efficacy and if this is due to a deficit in optimal adherence rates that are not always measured or whether some cases with osteoarthritis who face fears of exercise can be helped.

Given that active adults with chronic osteoarthritis are found to have lower disease manifestations than those who are inactive [31], and those who are inactive are found to have more negative psychological profiles [32, 33], we would like to propose the idea that some older adults may be willing to exercise but may not be confident they can do this safely alone or in a group [34]. Other psychological factors related to suboptimal exercise adherence as well as self-efficacy appraisals [that may fluctuate] are exercise beliefs, anxiety, self-esteem, and stress. All, in turn can be influenced by the environment and/or social factors, and can summate to explain the lack of adherence to exercise behaviors or goals even if advocated [17, 35].

Assumptions

Osteoarthritis is a disabling musculoskeletal condition.

Lack of movement is a disease enabler.

Poor exercise compliance is damaging to the diseased joint as well as health.

Those who want to exercise may not be confident to do this on their own/

Significance

Current standard osteoarthritis medical and surgical practices may often be contra indicated or less than effective in the high age adult, a group that commonly suffers intently. In light of the fact populations are aging rapidly towards higher ages than prior generations, and osteoarthritis is becoming more prevalent and costly despite years of counter efforts, those cases with uncontrolled disease may not only be at risk for nursing home admissions, but additional chronic health problems, as well as increasing social isolation and ensuing depression. A greater incidence of psychological, cognitive, and physical morbidity in those who are sedentary is likely to further both the personal as well as the public health burden and severely influence allied health personnel burnout even though regular exercise may lessen the collective burdens of these costly health concerns.

Methods

To address the above mentioned themes and explain the situation of non-adherence to exercise even if this potentially increases the burden of the disease, we sought and compiled relevant data from an extensive review of the English language literature embedded in the PubMed data base since its inception up to March 1 2026. The link between osteoarthritis disability and exercise and adherence issues was specifically explored using the keywords: Adherence, Exercise, Osteoarthritis, Older Adults, and Self-efficacy and building on prior works, we narrated these data in descriptive form, but did not assess exercise adherence or exercise self-efficacy correlates directly. More specifically we explored the potential value of ascertaining a role for and fostering exercise self-efficacy to promote program adherence in community based settings. Papers discussing long term care, medication, or surgery were not reviewed. Only selected points are made and only a general approach was adopted as far as exercise and osteoarthritis terms were used. The focus was on older community dwelling adults, but no media based exercise studies were reviewed, and those with multiple intervention strategies including exercise were omitted.

Key Results

A host of reports confirm osteoarthritis is a widespread problem requiring persistent intervention to offset its immense personal as well as public health costs. Another body of covering more than a century of exploration shows osteoarthritis origins are not well understood; but that this is painful condition that involves the whole joint including its surrounding muscles demands insightful therapeutic attention. However, many efforts to address osteoarthritis that rely largely on the idea this is an age related localized joint cartilage lining disease, do not attempt to unravel its multiple sources that may be remediable. Commonly, they rather attempt to provide symptom relief or local injections that fail to appreciate the disease from a holistic viewpoint. They may thus fail in efforts to reverse the important causes of the disease that lie partially in the neuro-motor realm.

At the same time, exercise as a remedy is negated or overlooked by many even though other data show laboratory animals as well as humans demonstrate highly measureable detrimental joint structural and stabilizing impacts post immobilization that can be reversed when movement is reinstated gradually. At the other end of the spectrum, uncontrolled exercise or movements due to instability or poor bone mass health can cause local bouts of sub acute inflammation as well as joint effusion and reflex muscle inhibition that can hasten joint destruction. Stronger muscles however can likely better protect joints from deleterious impacts in a timely way, but may require dedicated training that is often discontinued even if promising or overlooked completely. Yet, a problem arises in that over 40 current systematic reviews on osteoarthritis generally fail to observe any statistically valid exercise effects, no matter what is studied. Most authors however, attribute this to research design limitations, small samples, and their diversity, rather than efficacy being in question. Moreover, several allude to the impacts that are possibly lost or obscured because of the limited scope of assessments, usually observational or subjective, and their narrow scope, thus targeted timely carefully tailored interventions or possible adherence gaps and actual salient benefits such as muscle mass improvements may not be readily discerned and are thus undervalued or negated in favor of more extrinsic based interventions applied passively.

Explanatory Factors for Exercise Non Adherence

In addition to challenges in capturing generalizable exercise impacts in large scale studies, the studied intervention may well fail if their potential exists, but are discarded or followed only erratically by the participant. Of course it may become obvious that exercises may cease due to poor exercise effects as a result of a lack of tailoring even if recommended. The non adherence question may also reflect a combination of physical as well as psychological factors that oppose or impair the motivation towards exercise participation, such as depression, fatigue, pain, stress, fear, or anxiety, as well as feelings of powerlessness or being overwhelmed.

It also appears type of exercise can be of immense relevance for influencing adherence rates, for example, exercises may be viewed as an activity requiring gym membership and stressful actions that are non private rather than exercises such as Tai Chi that are gentle and graceful and can be done in private and are shown to foster physical as well as psychological health among adults with multiple health conditions including joint movement [36]. Indeed, such approaches may markedly reduce chronic pain and improve function to a greater degree in the elderly that exercise than those with a similar health profile who remain inactive [36] but are unlikely modes of most exercise regimens embedded in the historic literature and may be unsafe or discarded by an older adult with severe pain and anxiety.

Although adherence is not commonly assessed in many cases and the methods of doing this are often open to question [37] not wanting to do all that is required, or having an unfavorable attitude to a recommended interventions of any sort that have a sound possible reparative basis is undoubtedly problematic in a disease where it is accepted self-management is essential and requires multiple physical actions to avert any downward spiral, along with patient specific beliefs and/or attitudes that are self-fulfilling and evoke multiple determinants of non-adherence.

In this regard, and discounting the unmotivated patient, a considerable volume of research shows that both healthy persons as well as those with chronic health conditions may choose to refrain from exercising or may stop exercising due to their erroneous or prevailing self-efficacy, or confidence perceptions about their abilities to exercise, and/or their outcome expectation perceptions [28]. They may be influenced by negative reports concerning exercise benefits versus passive interventions for osteoarthritis, but not only is this conclusion subject to interpretation but a recent analysis highlighted the lack of exercise interventions in clinical trials for people with knee osteoarthritis that satisfied the WHO guidelines. Thus, those carrying out exercises may not be receiving the appropriate dosage, among other problematic concerns [38] or are no longer encouraged to be active based on dubious aggregated conclusions in the peer reviewed literature.

Indeed, beliefs based on many flawed studies and/or researcher beliefs about osteoarthritis and exercise, families who don't have faith in the adult or the role of exercise, physician or provider lack of belief in exercise, media reports or others that convey mixed messages, especially futility messages of late and in the context of flawed past research, gaps in the literature, and few competing explanations for exercise failures [39].

In this regard, we believe the individual's current discordant exercise message exposures, past experiences with exercise, and their fears of exercise or falling, as well as ill advised or adopted exercises may do more harm than good and are likely to determine the extent of their disability even if their efficacy is disputed as their practices may be the only way to ensure joint stability and joint protection and the ability to function physically. The presence of any dizziness, fatigue, joint locking or instability, and inflammation during or after exercise which may likewise determine adherence rates must be monitored carefully. Additionally, the degree of pain at rest or when exercising, or after exercising, clearly warrant careful consistent monitoring as well. Selected key psychological variables that may interact or influence exercise adherence in the case of osteoarthritis that are listed below should be borne in mind for cases found to be having adherence issues or projected to have poor adherence, such as those in older age ranges [40].

- Health knowledge
- Motivation
- Self-efficacy beliefs
- Outcome expectations
- Stage of readiness for exercise
- Perceived value of exercise
- Fear of exercise outcome
- Pain
- Perceived severity of symptoms

Self-Efficacy

The cognitive behavioral explanatory parameter termed self-efficacy re[resents a concept initially proposed by Dr. Albert Bandura in 1977 to describe a person's belief about his or her ability to successfully organize and implement a specific task, such as physical activity participation. Research has shown self-efficacy, which can range from low to high is a significant mediator of multiple behaviors in the realm of chronic osteoarthritis, as well as healthy behavioral practices and can be strengthened. It is a measurable factor that has been cited to potentially explain the discrepancy between a person having knowledge about a desired behavior and the actual performance of this.

In terms of adherence to treatment recommendations, self-efficacy beliefs which are found predictive of motivation levels, thought patterns, moods, emotional reactions and attitudes that can mediate the capacity and willingness to elicit behaviors that promote health [41-44] can possibly explain efforts to persist or adhere to a task despite the presence of disconfirming experiences [43]. Unsurprisingly, a key role for continuing to examine the role of self-efficacy in the context of strategies to optimize health outcomes of the chronically ill including pain and physical activity has emerged [45-47] alongside exercise encouragement and self-efficacy related attributes [48].

In particular, the specific confidence belief concerning one's ability or capability to carry out recommended exercise regimes or exercise recommendations successfully known as exercise self-efficacy has been found of immense import in the pursuit of efforts to both understand as well as promote exercise adherence in the face of a disabling health issue [49]. Other related attributes discussed by Selzer et al. [29] are exercise scheduling and coping self-efficacy, denoting the extent to which a person has the confidence to carry out the exercise recommendations regularly, and to plan and prepare in advance so one's exercise time is not impacted by extrinsic factors and any adverse effects of the exercise task [49,50]. Disease associated factors, and feeling confident the requirements can be accomplished as planned are additional exercise adherence correlates as are outcome expectations for exercise that may be significantly associated with physical function, perceived health, self-efficacy, and fear of falling [51]. These findings suggest the importance of personal factors in the design of interventions to promote exercise behavior changes among elderly patients with knee osteoarthritis.

In sum, the magnitude of a person's self-efficacy for a particular task can impact their behavior, such as exercising regularly so as to improve their health status. Amenable to intervention through a step by step well-researched set of strategies, this intrinsic cognitive variable is emerging as one of great salience in efforts to improve regular exercise participation and adherence in the disabled osteoarthritis adult. It can help bridge uncertainties but is not a strategy likely to be helpful in cases who do not intend to exercise or partake in formal physical activities.

As the literature reveals self-efficacy can potentially influence exercise participation in those who want to succeed regardless of age, disease severity, pain and past exercise experiences, ratings of task difficulty and general perceptions about their functional ability. These thoughts can however be modified or framed in a more positive way [52]. Moreover encouraging high rather than low post exercise outcome expectations can potentially increase exercise self-efficacy estimates and with this exercise adherence rates [53].

In terms of prospective studies linking perceived self-efficacy beliefs and exercise adherence Piyakhachornrot et al. [54] who developed an integrated health education program including exercise based on self-efficacy theory that aimed to enhance self-efficacy expectations among patients with knee osteoarthritis showed positive results in a recent quasi experimental study. In terms of mastery experiences, patients were trained to precisely carry out their exercise regimens. The subjects received demonstrations on how to do this and watched a patient with a similar condition carry this out. They were specifically encouraged to engage in exercise or perform activities related to reducing knee symptoms they had learned. To reduce emotional arousal they discussed and shared strategies for reducing barriers to exercise and participants were trained until they felt confident to exercise.

Loew et al. [55] who conducted an evidence-based walking program among older people with knee osteoarthritis called the PEP or participant exercise preference approach tried to evaluate if a participant who was randomly assigned to his preferred group would improve his/her adherence to the walking program compared to a participant who did not receive his preferred group. This was a 9-month pilot randomized trial. At 6 months, participants assigned to their preferred choice of program showed significantly higher adherence rates than those who did not obtain their preferred choice of program. After 9 months, significant improvements were shown relative to baseline function among the adherent participants who were allocated to their preferred group, as compared to those who did not receive their preference. Having subjects' preferences accommodated-which is believed to promote self-efficacy for a given behavior- appeared to produce more favorable outcomes than prescriptive approaches alone.

According to Kampshoff et al. [56], who undertook to identify demographic, clinical, psychosocial, physical and environmental factors associated with participation in and adherence to a combined resistance and endurance exercise program among cancer survivors, correlates of exercise adherence significantly associated with participation were having a higher education, being a non-smoker, and for high levels of activity, self-efficacy was a significant factor. As well, having lower psychological distress levels, higher outcome expectations, and perceiving fewer exercise barriers was associated with higher adherence [52].

Skou et al. [57] report on a trial among cases with multi morbidity who often experience osteoarthritis that suggests that personalized exercise therapy and self-management support for managing their disease, was more effective than usual care alone in improving health-related quality of life at 12 months in adults with multimorbid-

ity, without compromising safety and possibly reflected improvements in the ability to feel more confident about their abilities.

Moreover, Fang et al. [58] show that in the 8th week and the 24th week of their exercise application efforts, the frailty scores of the intervention group were significantly lower than those of the control group. There were significant improvements in self-efficacy at week 2, week 8, and week 24 and in weeks 8 and 24, participants in the intervention group reported a higher quality of life than the control group and there were no exercise-related injuries or falls among the participants. It was concluded their carefully applied exercise intervention for pre-frail older adults could reverse pre-frailty as well as increase self-efficacy for exercise among similar elders.

In sum, although type and complexity of the recommended exercises, plus the degree to which the older osteoarthritis case is vulnerable and disabled can mediate or moderate adherence to even the most salient exercise recommendations. Adherence is thus a highly cited remediable barrier among those with chronic health challenges and is conjectured to be strongly influenced by low task or exercise specific self-efficacy. However, this may vary according to what is recommended and its applicability to the individual and a focus on possible known advantages as well as contraindications and well planned thoughtful self-efficacy enhancing steps may prove highly favorable.

Practice Suggestions

Since self-efficacy, a predictor of perseverance and commitment to one's goals, plus the extent to which one dwells on shortcomings and failures, is expected to align with long-term exercise adherence rates and practices needed in many prescribed chronic osteoarthritis disease situations as a first line strategy [59], it is apparent providers may have to first assess and then assist those with exercise barriers especially feelings of low exercise as well as general self-efficacy in order to advance this recommendation using a step by step approach, alongside a long-term collaboration [44] Linking clients with chronic osteoarthritis to others in the social network with similar traits and problems, especially those who are motivated to succeed and can serve as models may also prove very helpful.

As outlined by Cabral et al. [60] focusing on self-efficacy for exercise as a key brain behavior mediator can impact to neurocognitive health crucial for promoting exercise adherence. To achieve this, offering the older adult a menu of options for undertaking the desired task performance, and letting them select the method they feel will work best for them [61.62,70-72] is deemed highly advantageous. Other steps recognized as potentially necessary to build exercise confidence in the face of arthritis are imagery of a model like them succeeding as well as mentally rehearsing the anticipated actions and their success, along with some form of contracting and goal-setting and collaborative problem-solving [72].

Resnick [61] who conducted research to better understand the factors that can influence the efficacy beliefs of older adults as regards being motivated to participate in a rehabilitation program identified 11 major themes amenable to intervention. These included: motivation and verbal encouragement, having exposure to positive role models, being able to deal effectively with patient's past experiences, and current aversive physical sensations and are less likely to be forthcoming by the sole use of digital technology to encourage exercise in the non confident disabled older osteoarthritis case.

Additional research has shown that for purposes of enhancing exercise adherence, a problem of major concern to all patients who suffer from pain and possible related exercise anxiety: 1. The clinician should assess the extent of pain experienced by a patient at rest and during the required activity as well as their confidence to move and apprehensions about exercise 2. They can help counsel and train the individual in pain reduction skills through relaxation, distraction or imagery, as indicated; 3. To secure their participation, the provider can have the patient repeat the desired activity alongside the acquired pain reduction skills and can monitor their progress and any remaning efficacy obstacles [62]. In addition to educating patients to better manage pain, educating them to avoid disease flares and progression, helping them understand why and how both sedentary as well as emotional reactions can affect their disease status is strongly indicated as well. Moreover, structuring exercise treatments in such a way that mastery experiences and positive feedback are maximized is recommended [45,62,63].

In addition, a client-centered or tailored approach delivered in an empathetic but clear and accurate manner [55] may prove more beneficial than usual care [57]. Indeed, rather than relying on remote therapy, a high level of health personnel involvement coupled with stress coping skills training and related educational and motivational confidence enhancing strategies may be especially helpful [59].

To this end, a sound patient-therapist relationship that permits mutual inquiry, problem solving and the negotiation of activity goals that align with the individual's preferences, may not only reduce fears but may foster a patient's sense of confidence sufficient to enable them to set achievable short-term physical activity goals, and to feel encouraged rather than discouraged to continue [62].

At the same time, unlike more youthful osteoarthritis cases, those in the high age ranges as well as frail states may prefer and be less likely to incur inflammation and micro or macro injuries via the adoption of gentle exercises or those favored by the elderly [58,64,65]. As well, modest progressive concurrent behavioral changes, for example in sleep hygiene or nutrition, can possible foster observable increases in exercise adherence as well as self-efficacy when compared to unrealistic goals that do not incorporate well-conceived manageable successive non impactful action steps [58]. Starting with the easiest task or the task most likely to be successful, mastery aids that can be gradually withdrawn, plus role plays and homework can be implemented. Moreover, practicing the desired activities in venues and situations that closely approximate those encountered by patients in their daily lives may be especially helpful in fostering long-term exercise adherence and outcomes that translate into actionable steps [44].

However, because an individual is less likely to perform an activity if they feel less than confident of achieving success, the role of any prior negative exercise experiences should be addressed early on [62] and support needs alleviated [66]. On the other hand, overconfidence or willingness to exercise no matter what, regardless of pain or other disability problems, such as frailty, may not be conducive to favorable health outcomes, especially among those individuals with arthritis, heart disease, osteoporosis, or some form of neuropathy who want to remain active and pain free.

To counter pain that thwarts exercise intent, rather than relying on medication, encouraging clients to adopt a calm state before exercising, helping them to focus on the goal of the activity, not past experiences, as well as minimizing cognitive stresses, may possibly prove beneficial. The role of mutual goal setting, along with frank, empathetic discussions and demonstrations, reassurance about exercise capability, along with appropriate reinforcement strategies, should also be considered [67].

In addition, because not all chronically challenged will be confident enough to exercise alone, supervised programs in the community may help encourage their continuation [53]. Educating spouses, family members and care-givers about the importance of regular exercise and garnering their support to secure adherence may similarly be very helpful in this regard [53].

However, in light of the many factors that may converge to reduce the chronically ill patient's motivation and willingness to pursue exercise recommendations including- the individual's prior exercise experiences, their overall disability status, along with their exercise beliefs, personal and tangible resources, lifestyles, personal goals and interests, a careful initial assessment, followed by a well construed individualized therapeutic strategy is highly indicated [68]. Moreover,

this prescribed regimen should also be easy to follow, or repeated frequently, and designed in line with the patient's joint status and abilities [69]. Reminders, cues to action, and scheduled follow-ups can provide the necessary feedback, encouragement, reassurance, advice, and support for continued exercise participation [62]. To prevent or avert short and long term exercise non-adherence, planning for relapse, a specific self-efficacy protocol alongside the stages of change theory dimensions of precontemplation to maintenance applied in its own right may prove useful, as may a minimal intervention approach.

In sum-

- Adherence to a program of appropriate exercise or physical activities is often crucial to the well-being of the chronically disabled older or high age adult suffering from osteoarthritis.
- To ensure exercise adherence, gentle carefully designed exercise regimens among the chronically disabled osteoarthritis older age adult, as well as enhancing their self-efficacy perceptions for exercise appears to be one possible efficacious approach of great potential significance in the disease management cycle [70].
- To this end, clinicians can assist patients by serving as active partners in the confidence building process, and by helping them adopt a favorable, albeit realistic set of outcome expectations, in line with the patient's beliefs, personal goals, health issues, and values among other salient factors, such as the use of a regimen proven beneficial [71-74].
- To further assist older chronic osteoarthritis cases to exercise on a regular basis, even when they feel anxious or are in pain, benefits anticipated that are highlighted against the outcomes of failing to follow the recommended exercise regimen may prove helpful as may removal or replacement of environmental and social barriers [59].
- Acknowledging the patient's exercise preferences, a collaborative stance and willingness to help older adults to carry out exercises without undue stress, is also likely to foster greater exercise confidence and adherence [72-74].
- Being available for consultation, follow up sessions, the provision of appropriate feedback, advice, and encouragement, while allaying any excess exercise fears or concerns, is also strongly indicated [9,45, 62].
- In light of the neuro-motor underpinnings of osteoarthritis, muscular activation strategies consistent with minimizing pain during stair ambulation, such as specific. interventions aimed at gluteal and quadriceps muscle activation in particular may be warranted in cases of various form of knee osteoarthritis, such as patella based dysfunction [75,76].
- Both monitoring and strengthening a patient's self-efficacy appraisals may offer a potentially important channel of opportunity for fostering long-term exercise adherence among the osteoarthritis disabled older adult.

Closing remarks

Chronic osteoarthritis in any form requires a considerable degree of personal management, including regular exercise participation. In this regard a large volume of research consistently shows patients with one or more affected joints often fail to adhere to exercise recommendations that are strongly indicated for a multitude of proven reasons, even if more research is indicated.

Along with other modifiable factors, an apparently strong psychological determinant of exercise non-adherence termed low exercise self-efficacy that can be improved can also be an adherence deterrent. Hence, careful assessments of at risk older adults followed by appropriate indicated modes of exercise intervention alongside established incrementally applied self-efficacy enhancing strategies such as starting with easier tasks such as imaginary exercise practice and following this up with active steps, periodic assessments and application of needed changes, establishing a long-term rather than a short-term therapeutic strategy, and the provision of desirable levels of encouragement, may be paramount in fostering greater rates of exercise adherence among those with disabling osteoarthritis that lead to multiple health benefits and improve life quality, regardless of joint[s] affected.

To ensure those with multiple joint derangement and other challenges do not deteriorate inadvertently due to a failure to identify both the most desirable means of fostering neuromotor control plus low self-efficacy perceptions and motivation towards consistent exercise participation, those who are isolated, depressed or anxious, in excess pain, obese, or frail, or experiencing periodic disease flare-ups or exacerbations and fears of falling or movement, should be specifically targeted.

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