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Averting Adverse Drug Induced Falls Risk, Osteoporosis, Fracture, Pain Status plus Depression Outcomes among Older Adults with Neuropathic Knee Osteoarthritis via Qigong Therapy Initiation and Practice: Is this Feasible?

Review article

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Abstract

Chronic neuropathic pain where even slight movements evoke distress plus likely persistent depression symptoms are widespread disablers of older adults suffering from mild to severe knee joint osteoarthritis. Efforts to reduce intractable knee osteoarthritis pain and depression that employ an array of pharmaceutical agents may however often prove both suboptimal as well as unsafe and provoke excess suffering, costs and premature mortality in considerable numbers of affected high age adults. This brief examines the possible use of Qigong mind-body principles for relieving pain and reducing reliance on antidepressants and opioids that may prove injurious. It specifically examines a possible independent or adjunctive role for introducing Qigong as one step to mitigating chronic centrally mediated osteoarthritis pain effectively and without undue risk. To this end, research reports and literature reviews over the last 25 years specifically speak to its potential impact on musculoskeletal pain and depression, Qigong practice may help to 3ncourage older adults to be more active self-managers and less dependent on drugs with few adverse side-effects.

Keywords: Depression; Drugs; Knee Osteoarthritis; Neuropathic Pain; Qigong, Rehabilitation, Treatment

Introduction

Various forms or correlates of arthritis, such as knee joint osteoarthritis, fibromyalgia, and osteoporosis are known to have an enormous negative impact on the musculoskeletal systems of many older adults. Commonly producing varying degrees of progressive articular cartilage degradation, and long-lasting intractable pain, stiffness, inflammation, and declining function across all strata of society, these conditions alone impose an incalculable global public health burden and one projected to increase in the near future [1]. In addition to unrelenting pain, especially among a sub group of knee osteoarthritis cases deemed to exhibit neuropathic and associated central pain sensitization attributes, the condition greatly impacts joint biomechanics adversely and progressively and commonly engenders a sedentary lifestyle plus depressive symptoms and other somewhat overlapping comorbidities such as obesity or frailty [2-6]. In addition, age and osteoarthritis muscle mass and strength related declines, possible knee joint instability, poor balance and nerve damage may contribute to functional declines, one or more falls related injuries, persistent pain and depression and selected psychoactive drug usage that rarely reduce neuropathic type pain states such as stabbing and burning pain . This series of adverse disease correlates that often manifests in more se-

vere forms over time, is not only highly debilitating and demoralizing, and impairing, but highly costly when accounting for the disability of many older adults who may consequently sustain higher degrees of pain, a high need for pain medication, excess weakness and injurious recurrent falls, hip fractures and others, plus a need for institutionalization, albeit all being largely preventable in our view [7].

For example, alongside efforts to manage knee osteoarthritis by targeting related risk factors, such as female sex, obesity, comorbidities such as diabetes, muscle mass losses, poor motor control responses, vitamin deficiencies, and osteoporosis, combating reliance on the use of analgesics, antidepressants, and opioid based drugs to control the disease may prove successful in delaying or allaying the increasing co-expression of depression/anxiety symptoms, inflammatory reactions, and chronic pain flares experienced by many older adults with one or both damaged knee joints [8,9]. Yet, in our estimation this secondary and possible tertiary prevention approach is often overlooked as relevant for many high age adults already diagnosed as having osteoarthritis, or experiencing bone pain, or both, however. Moreover, rather than these health deterministic factors being indicators of possible future co-existing impairments, they are not commonly sought or evaluated early on, nor pursued in a comprehensive holistic appropriately tailored and titrated manner. Depressive symptoms in particular are often overlooked as aging attributes rather than therapeutic targets [9] or treated with drugs such as antidepressants that may reduce bone mass and increase falls and fracture risk in this cognitively and physically vulnerable group. In addition, invasive therapies applied to relieve knee joint pain-often do little to alter the disease pathology and may exacerbate rather than reduce disability in the face of excess rather than curtailed joint use alongside possible emergent reliance on various anti inflammatory drugs that can impact cartilage adversely, plus narcotics and other analgesic drugs designed to quell pain. Exercises, in general, widely advocated here, remain largely unproven.

As a result of a strong belief in pharmaceutical solutions and others such as surgery, there is and has been an obvious and general lack of any concerted effort towards non pharmacologic approaches, even if effective for all forms of chronic musculoskeletal pain, and depression-that may prove causative as well as reactive [10]. This issue is not just a theoretical or academic one, but one possibly fostering excess rates of falls injuries and bone fractures often as an outcome of persistent pain, pain consequences such as sedentary behavior adoption and neuromuscular declines, as well as immense dangers associated with the excess use of narcotics as well as antidepressants that can only provide temporary pain or emotional relief at best.

In the context of the immense costs of failing to avert the rates of falls and fractures among older adults, efforts are underway to identify interventions that are safe and practical for alleviating chronic knee joint pain and depression-two major predictors of injurious and recurrent falls. Those that have few side-effects, while having the ability to heighten mental health status, cognitive vitality, weight control, heart health, diabetes, balance, muscle strength and mass, and can mediate some degree of inflammation control appear highly desirable. Those that result in heightened self efficacy for overcoming pain and dejection as well as reactive responses to negative events as well as the individual's ability to carry out his/her normal functions of daily living with minimal compromise are similarly strongly indicated.

In this regard, rather than physical activity alone, often highly recommended for promoting optimal health states at all ages, regardless of health condition and degree of depression, as well as for treating many pain and depression situations due to its reported direct, as well as possible indirect effects on reducing or controlling prevailing distress levels, this approach is not without limitations. This is because, when even the smallest movement even just touching the skin may be excruciating, or provoke shooting or burning pain, tingling and numbness, alongside knee 'buckling' or repetitive impact loading micro fractures of subchondral bone, it may be extremely challenging for the sufferer to even contemplate any standard mode of exercise participation, regardless of proposed benefits. In addition, although widely applied and encouraged, most conventional exercise approaches are indicated to be suboptimal or non conclusive or ineffective. Instead, current thoughts points to a possible role for more integrated mind-body interventions [3,8].

This idea appears to stem from the premise that exercises should help minimize sedentary protective behaviours, such as being inactive due to pain fears, but safe rather than injurious, while accounting for disease physical as well as mental health impacts [11]. In this respect, one mode of exercise termed Qigong that has proposed healing potential, and shows consistent lessening of overall prevailing pain, pain-depression, impacts, sleep challenges is gaining traction and immense interest. It is an ancient Eastern therapy approach that appears indicated for older adults with painful knee joints as it is not fatiguing or stressful, can be done in a seated or reclining position, and is not as stressful as more conventional resistance training or aerobic exercises. Its benefits are further found to be commensurate with other pain and sadness relieving modalities including medication and must hence warrant attention according to Frank et al. [11].

In this context, Qigong, has been applied for many centuries to promote health, healing, and vitality, and to prevent or cure various diseases and appears of great promise to other societies [12-15] given its use of natural body postures and flowing wide range movements designed to reduce fatigue and tension and quieten the mind [15-19] and possibly, excess stress [18]. Designed to maintain or improve wellness [15] and for improving health and symptoms associated with psychological and musculoskeletal problems through the regulation of body and mind [14,20] it appears much can be achieved by a) the practice of internal Qigong, and/or b) external Qigong received by an individual by virtue of an apparent transfer of energy from a skilled and qualified Qigong practitioner [17] or through acupressure, body massage, and breathing techniques [15] that encourages motion, but does not place undue impact or stress on the affected or unaffected joints or soft tissues, while offsetting excess pain, inflammation, fatigue, and feelings of depression. At the same time, social interactions may increase, as may the functional capacity of older adults despite persistent pain and emotional challenges.

In the case of the older adult living in the community who has moderate to severe knee osteoarthritis and wishes to be proactive, as well as the moderate to high percentage of cases with neuropathic pain features [2] Qigong may be a practical solution especially among those who cannot take medication or undertake surgery. These gentle movements can be conducted in the home, community, or worksite with no equipment, or need for special clothing, and/or can be incorporated into standard intervention approaches or its components introduced incrementally as indicated can serve as a gateway for more advanced exercise approaches such as resistance training. The exercise movements and related meditative like actions deemed to improve energy flow, posture, coordination, and movement quality may safely encourage or ignite further active living rather than sedentary living behaviours, as well as reducing the potency of the chronic pain experience, while optimising the body's physiological and cognitive biochemistry balances, perceptions, common catatrophizing pain reactions, and distressful thoughts, quite significantly.

Additionally proposed benefits for those living with chronic knee osteoarthritis pain and depression are those impacts that may extend to the immune system [13] improvements in sleep quality [3,21-24] balance, proprioception, and agility [25] metabolic functions [19] and body composition [26, 27]. The active practitioner of Qigong may improve their overall health status and become less dependent on drugs that may provoke unanticipated and undesirable musculoskeletal injury risk and often, excess pain and disability as well as an increased mortality risk. Also proposed are benefits that may well foster a heightened interest in life [24] and thereby possibly a willingness

rather than a reluctance to enact personal efforts to protect their joints, self-manage their disease, and limit intrusive impacts as well as negative thoughts that can induce various pain states.

This mini review elected to examine the body of recent research concerning the degree of support for the application of Qigong as a safe and efficacious exercise approach for averting or reducing various degrees of knee osteoarthritis pain and depression that can otherwise foster a high chance of narcotic and injury provoking antidepressant usage.

Review Aim

Based on past literature, observations on chronic neuropathic knee osteoarthritis pain, and the failure of most drugs to safely attenuate these intense aversive cognitions, and the excess disability they may provoke, we sought to examine if a reasonably strong rationale for employing Qigong in the context of efforts to attenuate these pervasive debilitating pain states is feasible and a valid approach, in spite of the limited body of high quality literature in this realm and lack of universal consensus.

Research Question

Does sufficient evidence support applying Qigong as an independent or adjunctive strategy among high age adults for purposes of neuropathic pain and depression relief among older adults with knee osteoarthritis?

More specifically, it examines the potential efficacy of Qigong for overcoming the fear of movement, and thereby excess pain and depression in cases of knee osteoarthritis deemed to experience more pain than that indicated by radiographic measures of pathology. It strove to ascertain the value of Qigong as a means for introducing progressive tailored mind-body like actions designed to reduce pain and depression among high age adults with various chronic musculoskeletal pain problems, regardless of mode of extent of pain or intervention mode. We framed pain that lasts for three months or more and appears exaggerated relative to the degree of objective joint destruction as the target as this is often a precursor of health negating depressive symptoms that can lead to more pain and narcotic drug dependence, and possible downward joint health spiral that is often not readily reversible or treatable by surgery.

Relevance

The high costs of intractable musculoskeletal pain among older adults of which many suffer from intractable knee joint osteoarthritis presently constitutes an immense public health concern and degree of human suffering that requires urgent mitigation.

Methods and scope of inquiry

To this end, we selected an array of articles from the electronic data sources PUBMED, Google Scholar and PubMed Central consolidated sites published over the last 35 years that ranged from January 2000-May 2026. Key terms used for the search included Aging, Antidepressants, Depression, Falls, Fractures, Knee Osteoarthritis, Neuropathic Pain, Pain, and Qigong. All studies including systematic reviews related to 'internal' rather than 'externally' derived Qigong practices were eligible as long as they discussed the relationship between Qigong, chronic musculoskeletal pain and/or depression presence and outcomes pertinent to knee osteoarthritis rehabilitation in some way, regardless of terminology, design issues, mode or measurement instruments applied. Older adult oriented samples were of key interest rather than young adults. Other criteria required articles to discuss Qigong in any form and its application as regards chronic musculoskeletal pain. Not included, such as those applied to cancer patients, other forms of exercise and combinations thereof. Sources of both mechanical, emotional, as well as inflammatory pain and state and/or trait depression were deemed acceptable. Excluded were abstracts, non-peer reviewed articles, non-English based articles, articles based on Tai-Chi, conditions other than which is similar but a more active therapeutic approach, and articles examining pain and depression emanating from sources other than the musculoskeletal system, such as cancer pain or lung diseases. As well, Qigong articles that did not discuss the topic of musculoskeletal pain specifically from a clinical perspective, those that focused on cell biology, or did not focus solely on Qigong exercises alone with or without an instructor were excluded. As a result of the limited numbers of recent empirical studies related to the present topic, and their heterogeneity, only a narrative description of the available data was deemed suitable for examining the validity of the idea mind body exercises can induce protection against depression and pain pharmaceutical needs in cases of disabling neuropathic knee joint osteoarthritis pain that may not prove efficacious or remediable.

Synopsis of Findings

As of May 1, 2026, the present search yielded a greater array of papers that had to be excluded, compared to those generally relevant. Of these, most were systematic reviews of heterogeneous studies published in the past, and only a small number were empirical studies directly related to chronically painful knee osteoarthritis, and even fewer focused on biomechanics or pain as an outcome, and depression correlate, and did not do this in any standardized manner. Yet many Qigong benefits in the context of pain tended to prevail, even though musculoskeletal pain populations studied were highly diverse or poorly categorized or both. Attributes that are potential Qigong targets are summarized below. Actual recorded post Qigong benefits are highlighted as well. These data do not include any measure where Qigong was used as an adjunct to other exercise modes, thus potentially strengthening its unique potential to mitigate or reduce chronic pain or depression (Table 1 & Table 2).

As well as the above mentioned benefits, actual pain relief has been demonstrated post Qigong practices of varying types of related slow paced non stressful movements and mindfulness designed for cases with fibromyalgia [41], severe to very severe pain/chronic pain [19,22-24], back and leg pain [33,43-45], knee osteoarthritis [28,31,42,46-49] balance issues and falls risk [28,37,50] and neck pain [31,33]. Other data show no specific exercise mode impact or non conclusive impacts [eg 33], and often fail to study older non Asian adults, whether healthy or not, thus its universal chronic pain alleviating efficacy among older adults must remain in question pending further research [41].

Yet it appears practicing Qigong is a possible viable alternative to regular exercise conducted in the traditional mode in view of the finding of beta-endorphin increases and declines in adrenocorticotrophic hormone and cortisol and improvements in serotonin levels in those that practice the therapy [53,58-60].

Additionally, for adults said to have chronic neuropathic knee joint osteoarthritis, the exercise regimen associated with Qigong can potentially minimize adverse persistent tissue mediated pain mechanisms and improve circulation. They can be adapted to accommodate the individual situation, such as the presence of joint instability and comorbid anxiety about moving with the expectation these will prove beneficial, including the betterment of sleep quality [51,52] alongside pain relief or improved pain tolerance and stress control

In addition, many researchers report on possible post Qigong impacts on reducing movement disability in cases of chronically painful joints that are otherwise known to commonly deteriorate. Conceivably in this way, Qigong therapy may help to incrementally reduce reliance and need for addictive narcotics and antidepressants that can cause immense harm rather than not. Others show possible favourable impacts on body composition [25, 26] often associated with joint pain and degrading inflammatory influences, as well as excess joint

stresses, muscle fat mass encroachment, functional losses, bone mass attrition, sleep disturbances, and high distress levels [53]. Accordingly, we propose depressive reactions may abate along with falls injury and fracture risk attributable to unrelenting pain and depression and the use of one or more symptom suppressing medications [59].

Table 1: Relevant treatment targets

Physical
Articular cartilage destruction
Balance deficits [25-28]
Bone loss [29]
Bone microfractures
Circulatory problems [30]
Diabetes, diabetic neuropathy
Falls injuries
Fractures
Hypertension [31]
Immune system imbalances
Joint inflammation/swelling
Joint instability
Joint stiffness
Ligament and/or tendon/joint capsular damage
Muscle weakness, fat infiltration, wasting
Muscle tightness/spasm
Nerve damage/neuropathy
Obesity
Poor endurance/functional capacity [32,37]
Poor posture/coordination [18]
Proprioception [28]
Surgery [33]
Sympathetic nervous system dysfunction
Vasoconstriction [15]
Cognitive
Anxiety [34-42]
Depression/ impaired mood [35-38,42]
Fatigue, sleep disturbances [29,35,39]
Fatalistic/pessimistic outlook
Fears, fears of falling [29,35,36,39]
Feelings of helplessness [21]
Low energy levels/lethargy [29]
Lack of confidence in prevailing abilities to function, control pain [21]
Pain catatrophizing/exaggeration [33,38]
Poor coping/problem solving skills
Stress [42]
Substance abuse/relapse [40]
Reduced or diminished social involvement/participation/perceived support
Undue stress/stress perceptions [19]

Table 2: Salient qigong findings

Possible Physical Health Benefits	Possible Cognitive Health Benefits
Aerobic Capacity/Energy Increases	-Anxiety
+Balance Control	-Central Sensitision Pain
+Blood Flow	<Fatigue
Blood Pressure Control	>Mental Function
+Body Composition	+Mood State
-Falls Risk	+Parasympathetic Activities
+Fitness	> Endogenous Serotonin, Dopamine, Epinephrine Levels
>Flexibility/Joint Range Of Motion	+ Impulse Control
>Functional Ability >	<-Pain Perception
General Health Status	+Psycho0emotional Wellbeing
+Glycemic Control	>Sleep Quality
+Immune Function	>Self-Efficacy
-Inflammation	Stress Levels
Joint Status/Alignment/Stability	
Movement Harmony	
>Muscle Endurance/Power	
>Muscle Strength	
+Muscle Tone/Fat Free Mass	
+Pain Threshold	
Posture	
+Physical Function	
-Physical Activity Limitations	
> Perturbation/ ProtectiveReflex Control	
-Stiffness	

Adapted from: Zhang [13]; Manzenaque [14]; Yeung [16]; Gallagher [17];Tan [22]; Coleman [24]; Wang [34]; Ladawan [31]; Dong [36]; Unlu [38]; Lynch [41]; Zhang [42]; Kiliachenkova [43]; Xioa [44-48]; Lee [49]; Yildirim [50]; Xiong [51]; Selfe [52-56]; So [57]

In sum, even if Qigong is eventually deemed no better than other forms of exercise, its importance in fostering physical activity and possible mental health improvements in a sizeable number of older adults suffering chronic neuropathic knee osteoarthritis pain and depressive symptoms who are at high risk for falls, especially if already frail, warrants more attention especially in Western contexts in our view. However, many systematic overviews imply that even if more affirmative research is desirable, Qigong practice may help to mobilize those older adults who have become too fearful to move at all and at risk for further debility. Indeed, its practice not only offers a gentle non fatiguing form of continuous self-paced selected movements designed to encourage energy flow and joint range of motion, but offers a form of relaxation directed controlled breathing exercises, easy for most adults with osteoarthritis to carry out alone or with other cognitive behavioral approaches incrementally and safely [40]. Practitioners can generally expect its application will not only decrease pain, but may well alleviate feelings of sadness and dejection to a high degree, while reducing the need for damaging addictive pain medications as well as antidepressants. Clinicians can feel confident these exercises will not increase health inequities because they can be readily taught or followed as well as modified by many forms of available sources and can be tailored to suit the individual situation and their functional abilities. Rather than lengthy non conclusive objective changes discussed in the regular exercise application realm for osteoarthritis, diverse benefits or outcomes can be observed readily in the short term, especially as far as pain and function is concerned. In terms of health gaps that often arise unexpectedly in the clinical sphere, literacy or educational level is not a major issue as most Qigong style exercises are easy to follow, and involve almost no cost, and minimal investments in equipment, or clothing or time on task.

The research to date further implies Qigong is safe for mitigating most physical illnesses and arthritic associated disease correlates, as well as having a satisfactory participation record. Its application may however be understated due to flaws in those studies that discuss discordant pain sources, fail to appreciate the presence of neuropathic versus local joint pain, and use subjectively oriented pain and depression intensity measures. As well data are often confounded by possible suboptimal intervention approaches and duration, and disorders that are unaccounted for such as diabetes. They do however, seem versatile enough to be practiced independently using a video application or smart phone or with an instructor, alone or in a group. They can be conducted in both sitting and standing, indoors and outdoors.

As per Yeung et al. [16] a Qigong based regimen can be advocated with confidence for purposes of alleviating distress of any source, and regardless of mode and could alter the subject's autonomic system response patterns favorably, while restoring homeostasis, and the ability to attenuate stress, and hyper cognitive emotional reactions that generates pain. Reported additional effects on emotional regulation may greatly help in the case of the presence of central pain sensitization manifestations due to observed favorable changes in multiple prefrontal regions of the brain, plus the limbic system, and striatum as well as in the expression of genes linked to inflammatory responses and stress-related pathways. Sleep quality may also improve and have an immensely beneficial overall health impact, especially on depression [51,59].

Clinical Implications

Chronic pain at the peripheral as well as central levels of origin and associated feelings of dejection in later life in those older adults suffering with disabling knee osteoarthritis is an enormous public health burden in all parts of the world. Even if data are limited, it is clear attempts to treat these conditions passively with drugs or invasive injections offer little in the way of reducing the overall burden, and if care is not forthcoming may worsen the costs of suffering and their magnitude. In the realm of safe non pharmacologic approaches, exercise participation appears to predominate even if this alone can do more harm than good if stressful in any way. Alternately, as far as establishing a key role for Qigong therapy in chronic pain and depression relief, as noted by Bai et al. [54] effects produced by Qigong exercises or therapy can be viewed as promising as far as showing favourable impacts on physical as well as emotional attributes of chronic pain [38,55]. Indeed, regardless of mode, and its stand alone or adjunctive intrinsic application [55] these mind-body programs appear to moderate emotional status and pain in meaningful ways among many suffering daily pain [56] while heightening physical function and life quality perceptions [49] regardless of underlying pain generating neuropathy, numbers of practice days, their duration and intensity.

As well, increasing biological explanations of how Qigong induces its effects are helping to distinguish Qigong from placebo impacts to a high degree. Many physical impacts as well as cognitive impacts post Qigong and others that are rarely mentioned, such as possible muscle benefits in their own right [38] tend to affirm its possible high relevance for intervening effectively without drugs in most musculoskeletal disorders and among cases with varying degrees of pain and distress, regardless of pain site, extent, and duration.

Importantly, the exercises can be conducted in multiple ways, and those most fearful initially may benefit from visualizing the movements as well as the benefits of rhythmic breathing and gentle motion, and as they gain confidence, may be able to proceed accordingly from imaginary practice of the movements to active non-weightbearing non stressful movements, and thereafter, if possible, to weightbearing postures. They can potentially serve as a gateway to undertaking other forms of exercise, such as resistance training thereafter with the expectation of multiple health and mobility affirming benefits (Table 2).

Based on our experiences in this realm, we recommend the following Qigong steps of action in planning a safe trajectory towards the goal of pain abatement in those elders suffering neuropathic pain and knee joint instability.

1.Qigong breathing exercises in sitting or lying

2.Incorporate arm and upper body movements

3.Proceed to include lower leg movements that do not evoke pain

4.If improved- repeat in standing or assisted support stance positions

5.Introduce functional movement such as marching or stepping

6.Incorporate other exercise regimens such as resistance training in sitting or lying

Note: The principles of self-efficacy enhancement are indicated here in our view, especially: a) management of anxiety/adverse emotional states; as well as b) proceeding in small steps as per patient derived goals, degree of pathology, and pain severity, extent, and duration.

Discussion

Although modern medicine has been successful in managing infection and saving the lives, preventing or treating the extent of the disability associated with the daily and nightly presence of chronically painful knee osteoarthritis remains extremely challenging. Since chronic pain does not wane in general over time, and is highly debilitating first, especially in a rapidly aging world where painful disablers such as falls and fractures are rife, and may increase the incidence of incurring disabling knee osteoarthritis, remedies to counter this situation are highly sought. At the same time, despite tremendous advances in medicine, pharmacologic and surgical approaches in this regard, limited pharmacologic or surgical benefits prevail as far as averting or mitigating the overlapping physical and cognitive health disablers of neuropathic knee osteoarthritis.

Indeed, in some cases, medication, as well as pain relieving injections or invasive surgery may do more harm than good, or may be contra-indicated for ameliorating neuropathic or centrally derived derived pain correlates. As well, drugs alone cannot reverse the disorder and may hasten bone and muscle mass losses inadvertently, as well as fostering addictions to dangerous forms of temporary pain alleviating medications and antidepressants that may impair timely cognitions and reflex responses, thus heightening falls risk.

To combat this cycle of disabling events, a growing evidence base suggests alternative low risk approaches, especially those that integrate exercise and meditation elements, such as some form of Qigong, appear highly promising. Moreover, adherence to exercise and self-care-essential for chronic knee osteoarthritis sufferers to undertake consistently, including those suffering chronic central, spinal and fibromyalgia associated musculoskeletal pain and depression, which is often very poorly impacted by traditional approaches, may be favorable impacted post Qigong practice [57,58].

Qigong practice may prove efficacious as well for fostering multiple improvements in overall wellness and physical function [8] as well as physiological and psychological health status [57-60]. Additionally, posture, breathing, circulation, weight management, and glucose control may also improve even when Qigong is only practiced for short periods of time [61]. At the same time, probable anxiety concerning exercise pain effects may be allayed along with chronic inflammatory pain, poor balance, progressive ligament damage, sarcopenia and/or bone mass losses, fatigue and limited functional endurance - all possible sources of central sensitization or neuropathic pain and depression production and perpetuation mechanisms.

We assert therefore that as a mode of complementary medicine, it is probable Qigong style exercises may be pursued in the long term to a higher degree than therapies such as cognitive behavioral therapy, or walking regimens because they may favorably impact multiple physical and emotional health determinants of knee osteoarthritis pain, including centrally mediated pain, frailty, obesity, inflammatory processes, and joint instability, especially in those cases where stressful body movements or postures would prove unsafe or pain provoking [60-67] as suggested more than 25 years ago by Wu et al. [63].

Explanations for its documented musculoskeletal pain relieving and harm reduction outcomes, include: its focus on muscle relaxation, improved blood flow, blood and brain biochemistry, mindfulness, balance control, and the delivery of nutrients, plus probable parasympathetic nervous system and favorable fibromyalgic effects [32,65,68-81]. Their use could avert unwanted bone attrition, confusion, artificial masking of joint safety that may induce perpetual micro trauma, falls and fractures as well as kinesiophobic states [20] and may be easier to adopt and maintain than regular exercises [68].

Qigong therapy practice may also help diminish actual numbers of painful sites or the spread of pain from one joint to multiple joints and associated declines in mental health status [69] plus heightened neuropathic symptoms due to poor glycemic control. Its regular practice may thus foster independence and wellbeing, rather than dependence plus an enhanced ability to effectively cope with pain [22] as well as depression, anxiety, stress, and emotional distress [23]. Moreover, even if the affected individual cannot exercise actively, external Qigong applied to promote muscle relaxation and blood flow may reduce pain [46,70], even if only one 10 minute session is forthcoming [24].

In addition, even if Qigong is not superior to regular exercises [71] older adults with chronic musculoskeletal pain who are generally more likely than not to be depressed and reluctant to undertake or adhere to activity programs as these may engender discomfort are said to generally find Qigong a pleasurable form of movement of non-stressful movements. Moreover, even if Qigong is not totally successful when examined in the context of some meta analyses [72,73] the fact that Qigong might be helpful in encouraging and motivating older adults with various forms of knee osteoarthritis pain to not only participate in- but to adhere to exercise participation over the long-term, is thus potentially invaluable in fostering an optimal health status and life quality and in strengthening the immune and vestibular balance control systems as well as balance confidence [77-79].

However, to rectify the diverse shortcomings in this body of incomplete literature, and render more conclusive outcome assessments more careful research is indicated. Efforts to tease out the possible influence of Qigong on self-regulatory pain control skills, pain self-efficacy, mood, sleep, muscle strength, sarcopenia, serum cytokines, and higher age life quality, plus any adverse Qigong associated events in those with centralized pain are especially indicated [74,75,82].

Comparison studies of different Qigong approaches and protocols that control for the potentially confounding role of medication usage, and/or other co-interventions are likely to be especially salient as well. Whether Qigong is comparable or not to various pain relieving medication regimens, and whether the mind-body modality is significantly influenced by expectations or beliefs which has not been studied thoroughly would enable a better determination of the utility of Qigong for mediating or moderating cases with various degrees and types of chronically painful musculoskeletal conditions and associated depressed mood states, as well as the importance of tailoring such approaches rather than assuming one size fits all.

In the meantime, we believe clinicians can employ one or more components of a Qigong routine with the expectation the movements will produce benefits commensurate with traditional exercises among older adults with chronic pain or possibly exceed these. The participant will likely choose to continue Qigong rather than regular exercises because they see results that are meaningful, and of high import in the context of their overall health status, their daily lives, and their physical as well as their psychological status, and pain control efficacy [76]. Cao et al. [19] spoke to the many possible Qigong therapy benefits when they showed an 11-week Taiji Stick exercise program effectively enhanced lower limb strength and dynamic balance, helped maintain upper limb strength, and a potential to reduce fall-related risks, while improving daily living ability among older adults. In our view, this alone speaks volumes to those who are seeking a means of safely alleviating their older orthopedic pain patients' suffering, stresses, anxieties, functional dependence and limitations, and often immense despair and high medication need and falls risk.

Conclusion

Although the validity of many Qijong related research conclusions can be questioned, based on 25 years of related study we conclude:

1.Qigong therapy is helpful in reducing pain intensity regardless of pain status.

2.The therapy should be examined more intently in non Asian populations.

3.Qigong may prove especially beneficial for those with inflammatory arthritis who cannot take medication, even if the exercises are only carried out for short periods.

4.Qigong protocols carried out by older adults with intractable pain under supervision [at least at first] may yet offer one form of movement therapy that is acceptable and can be followed in small steps that may be modified or advanced in complexity as the follower progresses.

5.The Qigong approach can accommodate different people's situations as well as their mental state, and if carefully tailored and titrated may help reduce or forego addictive possibly life threatening or health risk outcomes of many pain and antidepressant related medications.

6.Qigong adherence may reduce medication needs and health costs

7.Well-designed comparative studies of knee osteoarthritis subgroups, and various modes of Qigong, and designs that carefully control for attention effects and assess notable radiographic and biomechanical correlates, may help to establish which profiles of knee joint disease are most likely to benefit optimally from the various forms of Qigong, if any.

8.Training more health professional in this respect may ensure the patient receives a possible beneficial form of self-management that ensures they can safely meet their personal goals

In the interim, it appears that to assist older adults with chronic disabling painful knee osteoarthritis to achieve a desirable level of function and a life of desirable quality rather than a declining life quality, clinicians can study the potential wide-reaching physical and psychological benefits of Qigong paradigms, with its many observed and encompassing physical and cognitive correlates. Its application, which may not be suitable for everyone [50] because it requires diligent practice, [and tailored prescriptions [46] may indeed provide significant sustainable pain relief for many without the damaging side effects of many other forms of intervention, including opioids. The fact that the movements involved protect internal organs from harm, and are performed more slowly than more Westernized exercises, and involve thinking and concentration, rather than mindlessness, may further provide a unique approach to reducing pain perceptions and extent with few side effects despite limitations in the literature.

Moreover, the provider who has carefully assessed their client, may find those who were fearful of moving are indeed more functional and able to deal more effectively with mental as well as physical stressors that produce pain. Comorbid conditions that impact pain, and the onset of reactive depression may abate, while permitting cases who fear movement or who are disabled to be more active rather than passive partners in their recovery. As well as boosting their self-image and ability to control weight, better balance control and less drug reliance may ensue, thus decreasing the high risk of falling injuries in the elderly due to pain and depression, that is exacerbated by many addictive and psychologically impactful cognitive depressant drugs. Parallel improvements in sleep quality, physical and vitality improvements, and more balanced cognitive functions may reduce the need for harmful medications and their direct and indirect bone and pain impacts, morbidity levels, and possible premature mortality.

Final comments

Qigong based interventions even those applied in very small increments are likely to help most older adults suffering from intractable knee joint osteoarthritis pain. Its predominant theoretical assumption that views 'energy flow' as a health promoting tool is one that can be readily harnessed via breathing and associated paradigms and flowing Qigong movements. Although not helpful in all situations, older adults suffering complex pain and depression issues may find these exercises constitute a form of therapy that is sufficiently beneficial as well as remedial in multiple spheres. Its thoughtful application may not only attenuate a multitude of physical and mental health symptoms that exacerbate pain, but may enhance life quality, as well as impacting vital structures and systems plus joint and physical function favorably, non stressfully, non pharmacologically, and at low cost. Health professionals working with older adults who have chronic unrelenting knee osteoarthritis pain and accompanying depression symptoms can be encouraged to recommend these exercises as one possible remedy for reducing intractable knee osteoarthritis impairments, and a life of immense personal suffering and social costs especially if drug therapies remain the treatment of choice.

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Conflicts of interest

None.

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