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YOGA THERAPEUTICS IN NEUROLOGIC PHYSICAL THERAPY:

APPLICATION TO A PATIENT WITH PARKINSONS DISEASE

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Abstract

Yoga therapeutics may have potential for complementing neurologic physical therapy. In this paper yoga and yoga therapeutics and the principles of the yogic health model of yoga therapeutics are described. Fundamental themes of yoga therapeutics that are germane to clinical interventions, a list of resources, and some practical elements for immediate clinical implementation are offered for consideration. A case study involving a patient with Parkinson's disease illustrates the clinical thought process, used in applying yoga therapeutic examination, intervention, and outcomes.

INTRODUCTION

As the physical therapy profession considers its response to the many complementary medicine practices it is important to have a balance of openness to possibilities with analytic scrutiny. The incorporation of the conceptual framework as well as the elements of yoga therapeutics into neurologic physical therapy may serve as complements to our current practice. Yoga therapeutics offers a highly refined, specifically delineated practice for affecting human behavior primarily through the integration of the central nervous system with the entire human experience. While yoga therpeutic principles and interventions have been presented and adopted at major rehabilitation clinics and hospitals across the country, little is written to describe these practices and their outcomes. In this paper we will describe yoga and yoga therapeutics as well as illustrate the application of yoga therapeutics in the management of a patient with Parkinsons Disease (PD).

THE YOGA HEALTH MODEL

The term yoga is derived from the Sanskrit verb 'yuj', meaning to yoke or unite, often referring to uniting the body, mind, and spirit. Feuerstein's review of the term 'yoga' states that technically it refers to that enormous body of precepts, attitudes, techniques, and spiritual values that have been developed in India for over 5000 years.[1] The western focus on yoga to date has been the physical and measurable health benefits that result from a prolonged practice of this tradition. The postures (asanas), chanting, and meditation often presented as yoga represent only a small portion of what is described as a psychospiritual technology. A full, traditional yoga practice as listed in Table 1 consists of eight paths or spokes on a wheel to attaining

one's maximum potential. These paths include moral restraints, personal behavioral observances, postures, regulation of the breath, drawing the senses inward, concentration, and meditation. This focus of this article will be on asana and pranayama because of their more direct application by a physical therapist to clinical intervention. It is important to note that all six remaining paths are taught as part of a yoga therapy curriculum. The goal of a yoga practice is to attain a clear, fully actualized and integrated human being.[2]

Table 1 Patanjali's Eight Fold Path

Path	Description
Yama	(Moral precepts): non-harming, truthfulness, non-stealing, chastity, greedlessness
Niyama	(Qualities to nourish): purity, contentment, austerity (exercise), self-study, devotion
Asana	A calm, firm steady stance in relation to life
Pranayama	The ability to channel and direct breath and life energy
Pratyahara	Focusing on senses inward; non-reactivity to stimuli
Dharana	Concentration
Dhyana	Meditation
Samadhi	Ecstatic union; flow; "in the zone"

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Over time, a regular, disciplined practice of yoga results in increased strength, balance, stamina, flexibility, and relaxation [3-6]. These are all manifested as optimal psychomotor functions. Simple body movements done with mindfulness or attention (asanas) achieve the outcomes without pain or extremes of range of motion. Yoga as a life science philosophy also makes no statement about any specific religious practice or spiritual belief, and can be used to support all major faith traditions.

Yoga therapeutics will be defined as the application of yoga for health benefits. Yoga therapeutics is practiced by yoga professionals. This group is currently in the process of creating a national registry with the responsibility of credentialing practitioners. Requirements for credentialing are presented later in the paper. Presently a yoga therapist is a yoga teacher who instructs individuals with health concerns. It is important to note that the role of the teacher in yoga therapeutics is to create an environment where the student (as the patient is called) develops awareness to facilitate his or her own innate healing, rather being the active therapeutic agent [7]

Yoga therapy is a philosophical model of health based on the whole human experience. As such, it is a tool in bridging the historical *parts* paradigm to the frequently marketed wholistic model of human movement. The yoga model of health includes all dimensions of the patient's human experience and traces

back c. 3000-4000 years to the Taittiriya-Upanishad, which suggests the Vedanta doctrine of the sheaths or koshas.[1] Koshas, or bodies, as they are sometimes described, are listed in Table 1. Koshas denote allegorical layers or envelopes of reality within the realm of the human experience. This model was developed in an Eastern culture that used concrete images (bodies, sheaths, etc.) to describe what was understood to actually be an interwoven, indivisible whole, or in western terminology, quantum reality. Beneath the Sanskrit name of the koshas in Table 1are listed the modern equivalent of today's terminology of "Body, Mind and Spirit" for wholistic care. Historically the koshas were later condensed 2000 years ago into three similar categories known as shariras (bodies) described as the physical, subtle, and causal bodies. Reviewing the description column, it is apparent that these koshas by definition are progressively subtler to perceive moving from the lower or physical to the higher or spiritual.

This yogic model of health can be understood to require balance or integrity, as well as free flowing interaction and communication between all five of the porous, "thin" sheaths. Theoretically, imbalance or absence of awareness at any of the five levels results in dysfunction or disease, manifesting either directly or indirectly in one or more of the koshas. The holistic/quantum view of rehabilitation also maintains that no neurological condition exists, impacts, nor results as a consequence of a single kosha level and thus thorough care must at least consider each level.[8]

Table 2 Clinical translations of the koshas.

Sanskrit	Common Name	Description
Anna-maya-kosha **Body**	Food Sheath	**Comprised of the physical, solid aspect of a human (i.e. cells, organs, bones, joints, etc.)**
Prana-maya-kosha **Body**	Life Force Sheath	**The bioelectric forces and breath are a portion of prana. Similar to "Chi" or "Qi" concepts in Chinese medicine.**
Mano-maya-kosha **Mind**	Thought/Primitive Mind Sheath	**Includes emotions, reactive thinking, reflexes or subcortical function; is largely shared with the rest of the animal kingdom.**
Vijnana-maya-kosha **Mind**	Wisdom/Higher Mind Sheath	**Includes the higher cortical functions of reflection, intuition, planning and creativity; not as developed in animals.**
Ananda-maya-kosha **Spirit**	Bliss Sheath	**Sometimes equated to the soul or spirit of the patient.**

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Using an example of a person with Multiple Sclerosis (MS) who has experienced an acute exacerbation we illustrate how koshas would serve as an outline for examination. The therapist observes spasticity (1st Koshas) creating a bioenergetic hypertonicity (2nd Kosha), triggering the pain cycle, functional self-consciousness, and varied emotional reactions (3rd Kosha), making creativity, focus and compassion challenging (4th Kosha) while generally sapping spirit, sense of support, and enthusiasm (5th Kosha). In the process of evaluation the therapists may determine that the impairment at the body-level is not as limiting as impairment at the mind-level. For example if the therapist observed weakness (body level) but determined that the patient was limited by koshas such as fear, depression or inappropriate stress/energy management, which are at the mind-level.

APPLYING THE YOGA MODEL THERAPEUTICALLY

In applying the model, yoga therapists (YT) assume that stress plays a large role in the illness process. Stress is not only produced as a result of the nerologic condition, but the condition itself is are exacerbated by stress. Stress is often a significant antecedent condition. These ideas are consistent with the reports of Stress-related illness being an increasing phenomenon.[9] The yoga model depicts stress or sympathetic response as an imbalance or lack of integrity within or between the koshas. The YT considers positive outcomes or health to occur as balance or homeostasis is achieved through a parasympathetic response and an integration of all five koshas. Benson's "remembered wellness", to include accessing earlier motor strategies and the placebo effect, are additional outcomes present in this state.[9]

Consider a YT working with a student who has hemiplegia as a result of a Cerebral Vascular Accident (CVA). A CVA presents by definition as a physical (1st kosha) disruption of circulation. However, in addition to the physical impairment, if the stroke was preceded by an episode or pattern of rage or anger, the holistic view would say the condition was not healed or 'whole' until the individual worked at other kosha levels to determine the source and reaction to the anger, and developed appropriate strategies for the future. As such, the therapist will select interventions for both the current conditions and prophylactically because the subtle imbalances will also be addressed.

Clinically the YT's assessment of the student is composed of various stress or kosha-imbalanced factors, and the treatment goals generally include measurable relaxation phenomena. The YT assesses 1st & 2nd Kosha imbalances such as spasticity, low tone, guarding, decreased ROM and strength, splinting, thoracic/chest breathing, poor balance, and hypertension. The assessment also encompasses the remaining higher kosha presentations such as anger, depression, lethargy, anxiety, and fear. The goals, or intentions in the yoga vernacular, are to create an environment where the student becomes aware of the imbalances present, is offered options for responding to those imbalances, and then experiences change toward balance or health. Those changes might present as decreased spasticity, balanced affect, full diaphragmatic breath, enhanced balance, decreased impairment, increased functional mobility, and a sense of efficacy.

The YT also directly addresses the fact that beyond the host of functional challenges neurologic students face, many often face a review of their life in the presence of the disease, disability, and in some circumstances, end-of-life concerns. They may ask such questions as: Who am I? Did or do I make a difference? What is next? Can I handle it? What will become of me? All are very 'spirit' (5th kosha) oriented questions that impact the role of the YT and the movement system of the lower koshas. This reflection of spiritual searching by the student demands a complementary approach in assisting the student to identify, understand, and achieve their goals. The broad depth of yoga addresses these concerns: changing roles and level of function: shifts between independence and dependence; fears and anxieties; end of life concerns and questions; and, a strong support of their faith or spiritual tradition.

The YT then selects from the eight paths (see Table 1) techniques and methodologies that have been observed to create an environment for reconciling the imbalances of the koshas. The attractive simplicity of yoga therapeutics is that all of the koshas can be accessed through the physical therapy skills of positioning, movement, and breathing without having to directly address the more esoteric paths. The tools of pranayama and asana will be described in further detail.

THE TOOLS OF PRANAYAMA AND ASANA

The full practice of pranayama is a complex one requiring careful instruction by an experienced YT. There are over one hundred techniques of breath regulation, ranging from a full diaphragmatic breath to prolonged retentions with very specific body positions[10]. In this paper the focus will be on the establishment of breath awareness and facilitating a full diaphragmatic breath. The yoga health model

maintains that by having the student direct the thinking mind (third kosha) to sensing and moving with the breath, there is little opportunity for that thinking mind to worry, despair, or become distracted. The focus of the mind on the sensation of breath and movement reduces stress, or the sympathetic response, which the model postulates allows the autonomic nervous system to move towards homeostasis with an inherent facilitation of sensorimotor integration (SMI).

Returning to the patient with hemiplegia, the YT would initially confirm or establish a diaphragmatic breath, utilizing the student's voluntary ability to regulate the normally autonomic function of respiration. Once mastered, this breath would be incorporated into and synchronized with all movement. The reader is referred to Light on Pranayama reference which advanced techniques the YT might progress to that have unilateral emphasis for hemispheric integration, energizing effects for the despondent student, or deeper relaxation effects for the agitated or angry student[10]. These techniques would be instructed as home activities to be practiced daily, as well as on demand when the student becomes aware of imbalance in any of these koshas during ADL's.

Asana is the other tool of the YT that shares much in common with its physical therapy counterpart, therapeutic exercise. One definition of asana is that of a postural pattern created by a deviating the head and trunk from the center of gravity and having the pattern maintained purposefully for a length of time. These patterns are prescribed and ideally performed using a minimum amount of voluntary effort and a minimum expenditure of energy for its maintenance and adjustment. True asana is classically described as having the qualities of stability (sthira), ease (sukha),[1, 11] and effortlessness or minimized effort (prayant shaithilya). The YT has thousands of asana to choose from in order to create an environment of mindfulness and kosha awareness

An asana postural pattern is initiated slowly and with attention to internal sensation and breath. It is maintained for varying lengths of time and is released in a smooth and effortless manner. An asana is not an artificially held or braced 'posture' or a 'pose'. An EMG study revealed that when an asana performed isometrically there is a 30% increase in heart rate over the initial resting rate compared to only a 6% increase over resting rate when practiced the effortlessly and with full awareness as described in yoga.[5]

From the yoga therapeutic perspective asana is an *attitude* that is psycho-physiological in nature where *state of mind* or *mindfulness* is of the utmost importance, hence linking the physical position with

the higher koshas. Every asana is purported to have an effect on each of the five koshas. The YT utilizes this understanding to facilitate balance based on the assessed imbalances. Since yoga is unique as an experiential philosophy, meaning, "Do not believe what is postulated, rather experience it," we suggest you try the following: Sit in a deep forward head sitting posture for 10 breaths and sense the joy and enthusiasm of the asana. Now contrast that with upright, heart open, and arms spread wide overhead, face soft… feel the attitudinal difference? Every asana contains some of those subtle experiences as well as the physiological responses that are discussed below.

The final stage of an asana is achieved through natural sequence of mini-stages challenging the student from midline stability distally, restoring stability and motor sequencing. The YT considers that each mini-stage may create a potential temporary disequilibrium by deviating the position of the center of gravity relative to midline or the base of support. Progressing slowly to insure each mini-stage is mastered through integration of the koshas, the YT advances the asana along a continuum. This continuum is generally from the core, proximal to distal toward the full postural pattern with symmetry along the midline, all key components of functional movement according to physical therapist Ryerson[12].

Asanas are often practiced as pairs, known as counterposes.[13] This is believed to create biomechanical balance by soft tissue lengthening, hyaline cartilage compression and distraction, reversing intervertebral disc pressures, and dural stretch. These counter forces are also delivered to the internal organs, composed of smooth muscle or the organs of the endocrine system. The student experiences the more subtle effects of the higher koshas through this counterbalance, bringing about a balance in emotions and the subsequent biochemical signatures of that balance. This endocrinological and mechanical stimulation coupled, with the physiological relaxation response, is cited as the source of many of the non-musculoskeletal benefits of yoga.[14]

The YT's neurophysiological explanation of yoga therapeutics has been documented by Taylor and Majmundar.[15] The assumption made by the YT is that human movement system performance is affected by the organims structure and physiology as well as emotional, psychological and spiritual conditions. In order for an individual to attain a functional outcome, the must be an increased perception of proprioceptive information, an awareness of thoughts and emotions, a decrease in cortical activity, and the development of non-reactivity to physical sensation. Classically, the functional goal of the yogi was the

elimination of postural sway and from this practice it is believed comes the objective measures of increased flexibility, strength, and balance/postural stability.

APPLYING YOGA THERAPEUTIC PRINCIPLES TO PHYSICAL THERAPY

Establishing collaborations with YT practitioners and incorporating yoga concepts may enhance practice with patients who have neurologic conditions. Consultation with a local yoga therapist will foster professional development for each party. As with the other traditions, there are the ethical considerations of knowing one's limits, receiving appropriate training for competency dependent on the skill level of the technique. While not discussed here, yoga therapy is used throughout the lifespan and can be applied to individuals with low and high levels of function. Please see Table 3 for information about contacting yoga practitioners and become a credentialed yoga practitioner as well as specific resources developed for individuals with neurologic conditions.

Methods of incorporating yoga therapy techniques into a neurological practice are presented below. They include many of the elements that are already a part of neurologic physical therapy practice. Although these elements may be used in a different way by the YT. The primary principles involve bringing the patient's focus and attention internally. This requires the patient to be attentive to the feedback or proprioception they are experiencing from all koshas, and within their capacity, to communicate or manage this feedback responsibly. The only prerequisite for participating in yoga therapeutics is to be breathing.

The practical yoga applications are presented below with the original yoga element in parenthesis.

Environment (Niyamas-purity): The niyama of purity includes orderliness, cleanliness, and the removal of distractions from mindfulness. Practicing this niyama in the clinic can be as simple as turning off the TV or radio, utilizing art and color tastefully, providing positive waiting room material, and a quiet, warm environment. From the waiting room to departure, attention to breath can be tactfully encouraged through signage.

Breath Assessment/Instruction (pranayama): The breath is both a mirror of the individual's autonomic nervous system and a tool for direct modulation. It is a tool to maintain internal focus by the patient with such techniques as incorporating all movement in synchrony with the breath (i.e. opening the front of the body with inhale and closing the front of the body with exhale through the sagittal plane), or by counting

breaths rather than repetitions, necessitating the patient maintain internal focus. A patient will model or entrain with the therapist's breathing pattern as well.

Pre-Post Body Scans (Asana): The patient forms both a pre-intervention baseline of internal awareness or proprioception, followed by a post-intervention comparison, allowing sensorimotor integration (SMI) to reach a cognitive level of appreciation. An axiom of yoga of unknown origin is, "They can't heal what they don't feel."

Verbal Cues (Asana): Monitoring the patient's vocabulary is a 'safe', conservative method of addressing the higher, subtler aspects of the patient. Word selection is a window into the patient's relationship with their body, illness, and overall health responsibility. Do they claim ownership of their body and current complaint? Do they speak in the first or second person? Who is responsible for their getting better? Remember to also change your verbal cues to correlate with the way the mind works by using more visual imagery and active language compared with concrete measurable instruction (soften vs. relax, telescope vs. reach, lengthen/inflate vs. stabilize, etc.). It is believed that these cues changes seem to augment proximal to distal sequencing more fluidly than linear, component directions.

Guided Imagery/Restorative Yoga (Meditation and Samadhi): Use techniques of visualization and guided imagery/relaxation, particularly during passive modalities. Provide enough of a period of time for SMI to occur during and after interventions compared with rushing the patient. Anatomical, regional or diagnosis specific audiotapes can reinforce proprioceptive and kinesthetic awareness. A Walkman and an audiotape make this an easy intervention. Instruct the art of relaxation, versus the patient's typicaldistraction or recreation scheme, as a means of allowing the body to move into a full relaxation response and its consequent SMI. The book, *Relax and Renew*[16] is a rich introduction to this art.

Therapeutic Exercise (Asana): This is the most obvious bridge between the yoga and physical therapy professions. Many of the exercises prescribed by physical therapists resemble asanas in form. Focus on the breath, movement synchronized with breath, decreased perceived exertion, and therapeutic intention may differentiate asanas from therapeutic exercise. Therapeutic progression is based on increasing intensity and the use of gravity modification to allow the patient/student success. Duration is determined by a number of breaths rather than repetitions. In order for the patient to complete their prescription, they must remain aware of the movement and direction of the breath. Disruption of a smooth, full breath signals the therapist

either the need for modification of intensity or loss internal focus by the patient. Yoga asanas have been integrated into other movement therapies because of their effectiveness and compliment to sensory motor integration. There is aquatic yoga, yogassage (soft tissue work in sustained asana) and *Somatic Yoga* which blends the work of Moshe Feldenkrais (see Stephens in this issue) and yoga.[17]

ADL Instruction (Asana): Emphasis on self-awareness is placed during activities of daily living. This is achieved by directing the patient to note the direction of the breath (inhalation/exhalation) through activities; the sensations involved at various aspects of the body during an activity, or the altering of movements based on a focus at various areas of the body.

Journaling (niyamas-self study): The use of a personal journal, to include reflections on their impairment and all of the other experiences, is a tool for broadening the patient's awareness of more subtle issues and also expanding the therapist's understanding of their situation. Whether this journal is kept privately or shared with the therapist is up to the patient's discretion. It is believed that keeping a journal can be a tool for the patient to develop a deeper mind-body connection as well as a sense of responsibility for their own health.

Home Programs (Asana): There is a proposed economy and benefit of using yoga as home program. Asanas tend to by definition be whole body exercise and as such generally do not require as many different forms. They can also be sequenced in an aesthetically pleasant, functional progression called vinyasas rather than calisthenic-type sections. There is some evidence that exercise that improves mood is positively correlated with compliance.[18] For instance, moving from quadriped, back to heel sitting with arms stretched forward on floor, returning to quadriped, then moving to contralateral leg/arm lifts, followed by arms overhead kneeling with a controlled transition to prone for SMI.

Group Therapy (yamas and niyamas): Yoga can be taught in either a group or one-on-one setting. The group setting of yoga for students with chronic pain, MS, Parkinson's, and post-CVA are just a few of the yoga therapy groups reporting benefits. On a practical note, delivering physical therapy to a group of similar diagnostic codes may be a cost effective delivery system for chronic illness that is more affordable and accessible to those dependent on discretionary funds in a post prescriptive or wellness format.

Table 3 Resources

Argue, John. *Parkinsons's Disease and the Art of Moving*. Distributed by Raincoast Books, Vancouver, B.C., Canada, 800-663-5714.

Dworkis, Sam *Recovery Yoga.* Three Rivers Press, NY 1997. A practical guide for chronically ill, injured and post-operative people.
Ross, Robyn. Yoga and Neurological Illness. In Michael Weintraub, ed., *Alternative Medicine in Neurological Illness*. Philadelphia: W. B. Saunders, 2001.
Yoga Research and Education Center (YREC) Home of the International Association of Yoga Therapy Journal and research bibliographies. They are actively seeking publishable studies and will assist in locating references. Membership includes newsletter and journal. www.yrec.org or call (707) 928-9898.
www.yogaalliance.org The US national registry for yoga teachers. Lists schools that are accredited and requirements for accreditation. 1-877-YOGAALL (964-2255) or Direct: (610)376-4421.
Richard C. Miller, Ph. D An authority on meditation, pranayama, mudras, and other healing aspects of yoga. There are wonderful written and audio resources available. www.nondual.com or call (415) 456-3909.
Yoga and MS Contact the Southern California chapter of the NMSS at (310) 479-4456 ext.106 regarding their handbook and video.
Mindful Practices for People with Parkinson's Disease A video exercise session emphasizing attention to breath, core initiation and conscious movement patterns. (877) 697-3422.
Balance: Constructing a Firm Foundation A training manual for an 8-week wholistic fall prevention program. (877) 697-3422.
www.yogatherapy.com The site has links to various rehab specialists in yoga therapy, suggested books, and references. There are two downloadable PowerPoint inservice presentations. Ask your clinical questions on the message board. Link to other related web sites. Patient care resources available at the Yoga Therapy Store.

CASE STUDY

The following intervention was undertaken to illustrate the clinical decision making involved in a yoga therapeutic approach for a patient with Parkinsons Disease

HISTORY: A 59-year-old female with a ten-year history of Parkinson's disease (PD) was seen for two 60-minute visits; an initial evaluation and follow-up visit three weeks later. She had received many PT interventions over the years with high praise for the role of PT, but admits to being non-compliant with her exercises reporting that she was too busy and experienced little direct benefit post-exercise. Her primary complaint was of a shuffling gait, especially in the morning, with decreased endurance limiting walking to 15 minutes of shopping without a rest; secondary complaints included a dry mouth and eyes; resting tremor; generalized stiffness but no insurmountable rigidity; slower fall recovery; unrelated pain in both arms and left hip exacerbated by over activity; slower rate of ideation; handwriting diminishing in legibility and size. She also complained of decreased vocal projection, though no problem with open mouth or drooling. She verbalized concerns regarding developing facial masking. She related being very active with the American Parkinson's Disease Association, and consequently was well informed and about the

management of the disease and compliant with her medications. When questioned about past experience with breathing exercises, she related that she no prior instruction in breathing exercises.

Examination: Static examination of posture revealed moderate forward head posture with flattened thoracic spine; scapula protracted with palms facing posteriorly and hands three inches anterior to plumb line. Functionally she moved from the sit to stand smoothly. She did not exhibit any shuffling of her gait, her stance time was decreased on the left, and little or no anterior/posterior scapular or pelvic movement. The spine remained straight and what little hand movement there was came from flexion of the elbows. Active range of motion of the extremities was grossly within normal limits with the exception of the shoulders, with 120 degrees flexion left and 145 degrees on the right. She presented with no rigidity and a minor resting tremor of the hands.

She sat with a slumped posture and no discernible movement associated with breath (2nd kosha). Her respiration was shallow, originated in the chest at a rate of 18 breaths per minute. There was no observable spinal, shoulder, nor abdominal movement associated with the breath. She was unable to actively retract her scapulae beyond neutral. Moving from standing to the floor she hinged from the hips and utilized a chair to bear weight on her hand. She was able to roll smoothly and able to come to standing with the assistance of a chair. She was able to fully open her mouth and could thrust the tongue tip just beyond the lower lip.

Assessment: The focus of the assessment was on the trunk and oral-facial stiffness, secondary impairments of upper quarter dysfunction, inefficient gait, (all 1st kosha) and primarily directed at the restricted breath pattern (2nd kosha). A yoga therapeutic approach balances physical (1st kosha) interventions by including asana that not only address that level, also address the more subtle koshas to include restricted breath pattern (2nd kosha), concerns/fears of masking (3rd kosha) and the lack of an assertive attitude toward her movement exercises (4th /5th kosha).

Interventions: To that end she was instructed in both a diaphragmatic and a full three-part yoga breath. Initially she was unable to engage the diaphragm in sitting, so it was instructed supine and then progressed to seated. Recruitment was inconsistent, ratcheted, and frequently out of sequence with upper chest accessory activity. She verbalized frustration at her inability to overcome the clumsiness and awkwardness of such a breathing pattern. She was reassured this was an almost universal initial experience. Having

initiated core awareness and the relaxation response, she was then instructed in a seated cat/camel exercise synchronized with cat on the exhalation and camel on the inhalation. Emphasis was placed on waiting (5th kosha) for the breath and initiating all movement as a radiation or wave from the belly. The next progression was standing at a counter, hands on a counter at arm's-length, she continued the cat/camel sequence known in yoga as standing up dog/down dog (see Figures 1 and 2). Again the patient reported frustration with sequencing the movement. The use of manual and verbal cues improved the sequencing of the movement . She was cautioned against excessive upper cervical extension and chin thrust.

To address the lack of pelvic mobility (1st / 2nd kosha) she then was instructed in a seated, cross-legged cat/camel with flexion of the trunk at the hips (see Figure 3). The right side was well tolerated, though on the left she could barely cross left over right and was directed to limit movement within a comfortable range. This was followed by a seated twist, (see Figure 4), in which she placed one hand behind her and the opposite hand on the knee toward which she was turning. On the inhalation she lengthened the spine in camel, and upon exhalation maintained that height while turning a body segment that direction. Internal attention was maintained by having her focus with each breath on different body segments during rotation to include shoulder, navel, heart, and chin. The twist was repeated to the opposite side with the intention of reintegrating awareness of scapular and thoracic mobility. She was then instructed in what was known as lion pose (4th/5th kosha) (see Figure 5), in which she abducted and externally rotated both upper extremities to 90/90 at the elbows and shoulders while opening her hands and spreading fingers to bear her *claws.* This is accompanied by opening the eyes and mouth as wide as possible while sticking out the tongue and *roaring* on the exhalation. She reported significant proprioceptive feedback from the entire oral-facial complex after 10 breaths reported sensing the need for the ferocity of the pose in meeting her daily challenges of PD. The final exercise was a hook lying, supine supported fish pose as in Figure 6. Rolling a small blanket into a cylinder three inches in diameter, she was instructed to breathe fully as she lay on the cylinder with support from sacrum to occiput to work passively against the forward head posture, as well expand the excursion of movement associated with the breath. She reported this posture as uncomfortable, and limited the exercise to only one of the requested three minutes. She was instructed to attempt a gradual increase in endurance, but only within her level of

comfort. She was given written instructions and told to perform the exercises daily. Follow-up was set for three weeks with the opportunity to call with questions.

OUTCOMES: Patient's Report: Upon follow-up she noted increased awareness of how small her breath was most of the time (2nd kosha). Found the breath to be comforting and relaxing (3rd-5th kosha). She related significant improvement in vocal projection and facial awareness (4th kosha). While verbalizing some frustration about limited exercise time, she related immediate benefit post exercise and an intuitive sense that this type of movement was more natural and functional than the parts-type therapeutic exercises of the past. She noted the emotional effect the lion pose had on adapting that spirit when faced with the daily challenge of PD (5th kosha). Her gait felt more efficient (1st kosha) but she had not been shopping to test her endurance. She incorporated the breath work at night when sleep was difficult and found it both comforting and restorative (3rd & 5th kosha).

Objective: She demonstrated a fluid, full three-part sequenced breath at 10 breaths per minute (44% decrease in rate) in sitting with thoracic extension and scapular abduction. Some refinement was made with verbal and hand cues on each of the exercises. She had discontinued supported fish pose secondary to the discomfort of the roll. That asana was replaced with a seated version with upper extremities fully externally rotated the maximal amount on full inhalation and that was well tolerated. In standing her hands were back two inches, palms against thighs (1st kosha), and visible abdominal, chest, and scapular movement on resting breath 92nd kosha). In gait there was both pelvic and scapular movement with increased stride length and a more natural arm swing from the shoulder girdle.

DISPOSITION: She was directed to continue with the series while gradually increasing the number of breaths, and to add breath synchronization to her previously prescribed physical therapy shoulder and elbow exercises. She was discharged to her home program and planned to continue active participation in her support group.

SUMMARY

In this paper we have described the selected principles of yoga and how they relate to the yoga therapeutic model. Practical applications for the incorporation of yoga into practice with neurologic patients were presented. A case report of a person with Parkinson's Disease who benefited from a yoga intervention was used to describe the clinical decision making process that a YT followed.

There are a number of skills and processes that are shared by yoga and physical therapists. These include the identification of barriers to optimal function, creating strategies or environments for enhanced proprioception and function, and learning as well as the assessment of structure and faulty motor sequencing/recruitment, and the prescription of remedial solutions. Where yoga therapists might differ is in their ability to evaluate the effects of emotions, stress, relationships, and spiritual imbalance on the human movement system. In addition yoga practitioners are required to practice a daily personal asana, breath and meditation. It is proposed that this practice enables the yoga therapist to generally move with above normal ease, strength, flexibility, and balance.

The profession of yoga therapy is a broad and ancient practice still evolving as it gains acceptance in the West. Through the creation of an environment where the student can develop awareness and new options and strategies, the yoga therapist addresses the whole realm of the student's experiences. As western science evaluates these methods and technologies, the physical therapy profession may garner additional interventions and insights into the 21st century management of neurological conditions.

Figures 1 Standing up dog.

Figure 2 Standing down dog.

Figure 3 Seated hip stretch.

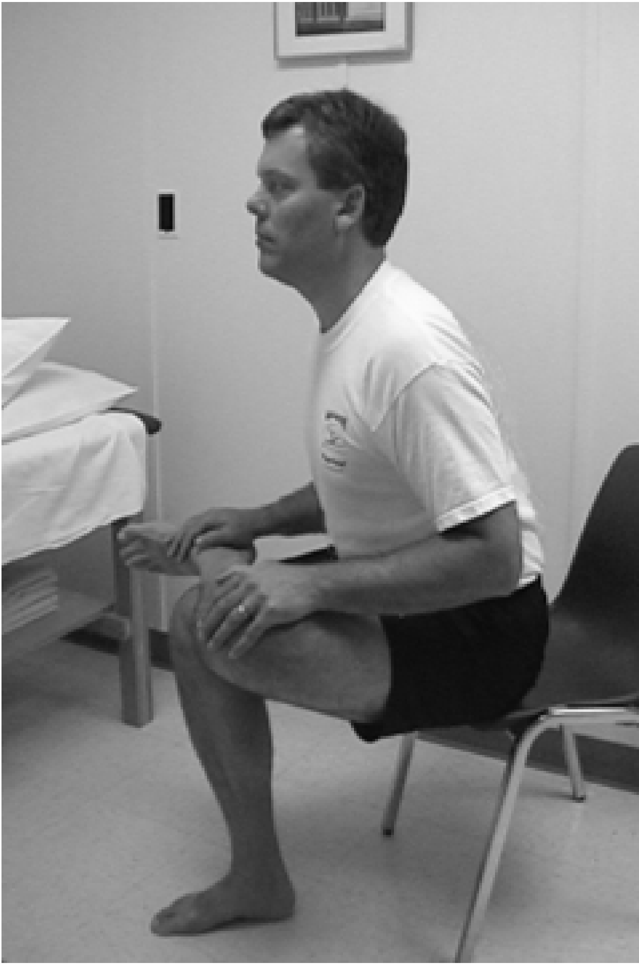


Figure 4 Seated twist.

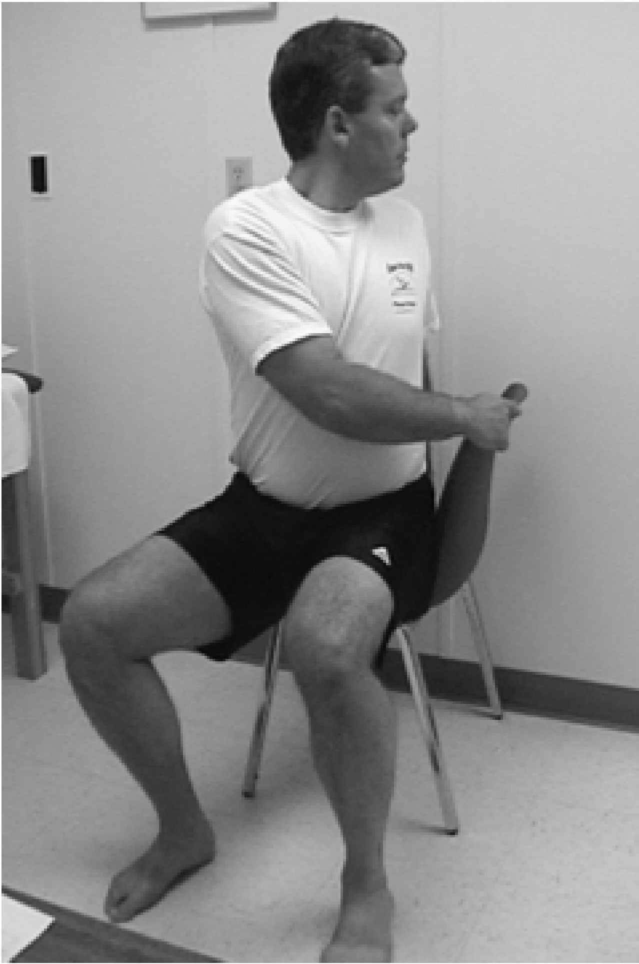


Figure 5 Lion pose.

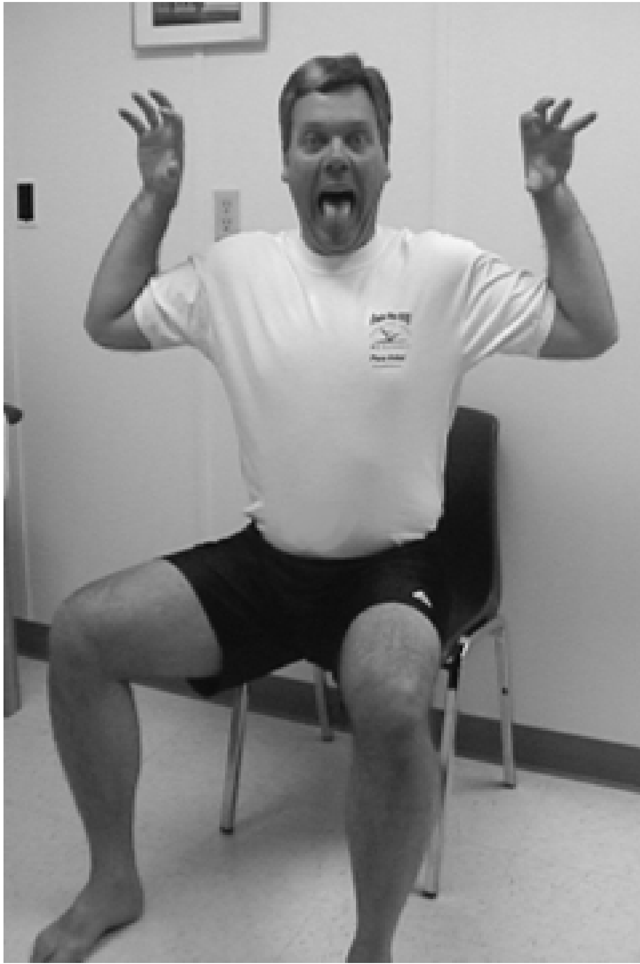
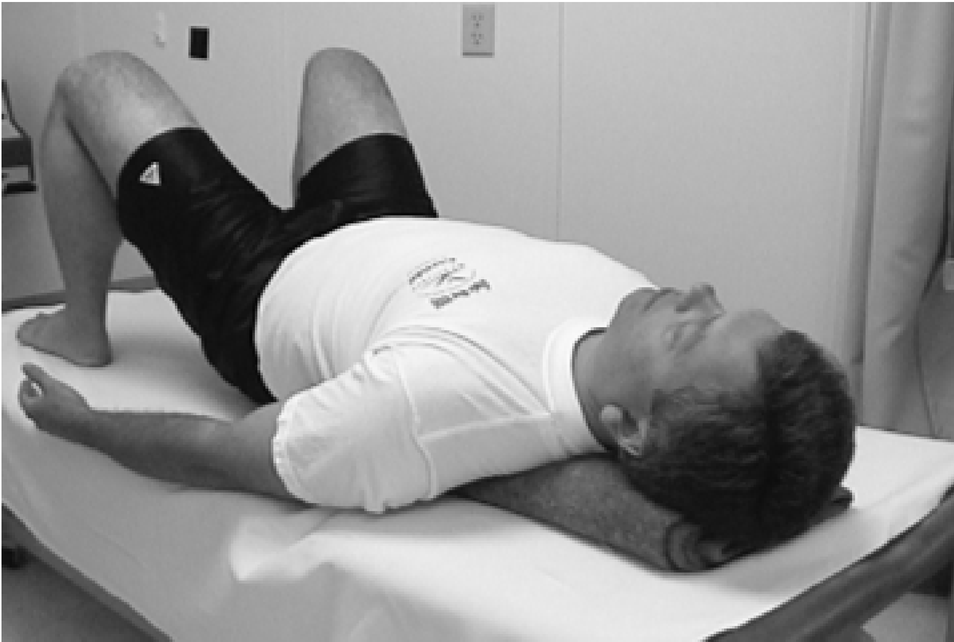


Figure 6 Supported fish pose.



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