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EXERCISE OR PLAY? MEDICINE OF FUN

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Abstract

Patients often equate biofeedback training homework to mandatory activities, which are often viewed as one more thing to do. Changing the perception from that of work to fun can encourage laughter and joy and help overcome a chronic pain pattern all necessary for healing. This paper encourages therapists to explore utilizing childhood activities and paradoxical movement to help patients release tension patterns and improve range of motion. A strong emphasis is placed on linking diaphragmatic breathing to movement.

Key words: Breathing
Chronic pain
Biofeedback
Range of motion

When I went home I showed my granddaughter how to be a tree swaying in the wind, she looked at me and said, "Grandma, I learned that in kindergarten!"

'Betty' laughed heartily as she relayed this story. Her delight in being able to sway her arms like the limbs of a tree starkly contrasted with her demeanor only a month prior. Betty was referred for biofeedback training after a series of 9 surgeries – wrists, fingers, elbows and shoulders. She arrived at her first session in tears with acute, chronic pain accompanied by frequent, incapacitating spasms in her shoulders and arms. She was unable to abduct her arms more than a few inches without triggering more painful spasms. Her protective bracing and rapid thoracic breathing exacerbated her pain and contributed to limited range of motion of her arms. Unable to work for over a year, she was coping not only with pain, but also with weight gain, poor self-esteem and depression.

Biofeedback training began with what we feel is the foundation of health: effortless, diaphragmatic breathing (Peper, 1990). Each thoracic breath added to Betty's chronic shoulder pain. Convincing Betty to drop her painful bracing pattern and to allow her arms to hang freely from her shoulders as she breathed diaphragmatically was the first major step in regaining mobility. She discovered in that first session that she could use her breathing to achieve control over muscle spasms. During the first week, she practiced her breathing assiduously at home and had fewer spasms. Betty was able to move better during her physical therapy sessions. Each time she felt the onset of muscle spasms she would stop all activity for a moment and 'go into my trance' to prevent a recurrence. For the first time in many months she was feeling optimistic.

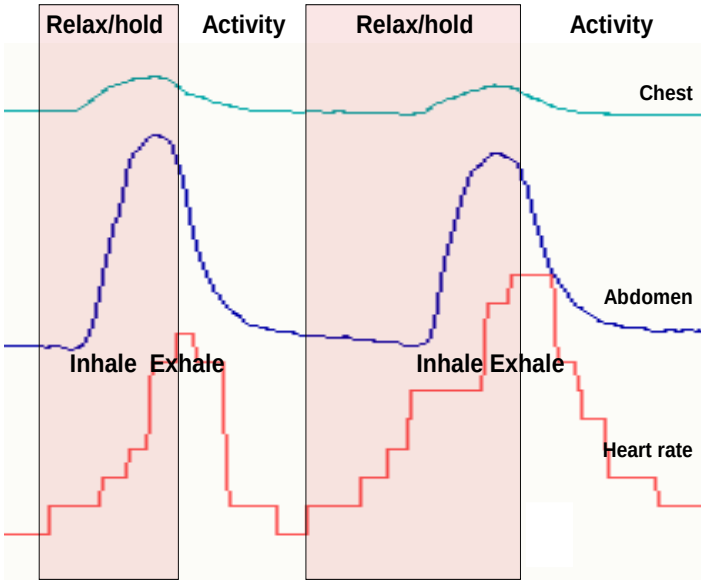

Figure 1. Perform physical activity that could aggravate pain only during the exhalation phase to inhibit pain sensations. ~~miscomfort~~ Discomfort can usually be minimized if activity (movement or treatment that induces pain, such as an injection) is performed or given during the exhalation phase. During the inhalation phase, one pauses with the activity and resumes during the exhalation phase. The activity

commences slightly after the initiation of exhalation and when the heart rate has started to decelerate.

Subsequent sessions built upon the foundation of diaphragmatic breathing: boosting Betty's confidence, increasing range of motion (ROM), and bringing back some fun in life. Activities included many childhood games: tossing a ball, swaying like a tree in the wind, pretending to conduct an orchestra, bouncing on gym balls, playing "Simon Says" (following the movements of the therapist), and dancing. Laughter and childlike joy became a common occurrence. She looked forward to receiving the sparkly star stickers she was given after successful sessions. With each activity Betty gained more confidence, gradually increased ROM, and began losing weight. Although she had some days where the pain was strong and spasms threatened, Betty reframed the pain as occurring as a result of healing and expanding her ROM—she was no longer a victim of the pain. In addition, her family was proud of her, she was doing more fun activities, and she felt confident that she would return to work.

Betty's story is similar to many other clients whom we have seen. The challenge presented to biofeedback therapists is to help the patient better cope with pain, increase ROM, regain function and, often the most important, to reclaim a *joie de vivre*. Increasing function includes using the minimum amount of effort necessary for the task, allowing unnecessary muscles to remain relaxed (no dysponesis[i]), and quickly releasing muscle tension when the muscle is no longer required for the activity (work/rest). The challenge is to perform the task without concurrent evocation of components of the alarm reaction, which tend to be evoked when "we try to do it perfectly," or "it has to work," or "If I do not do it correctly, I will be judged." For example, when people learn how to implement micro-breaks (1 – 2 second rest periods) at the computer, they often sit quietly believing that they are relaxed. However, they may continue a bracing pattern. Alternatively, tossing a small ball rather than resting at the keyboard will generally evoke laughter, encourage generalization of skills, and covertly induce more relaxation. Ironically, therapists in their desire to help patients to get well commonly assign structured exercises as homework that evoke striving for performance and often boredom—this striving to perform the structured exercises may inhibit healing. Utilizing tools other than those found in the work setting helps the patient achieve a broader perspective of the healing/preventive concepts that are taught.

Obviously, clients are active participants in their own healing process. This implies that they practice exercises during the therapeutic session, at home and at work. Consequently, home practices are assigned to integrate the mastery of news skills into daily life. To help patients achieve increased health through physical activity three different approaches are often used: movement reeducation, youthful play, and pure exercise. How the patient performs the activity may be monitored with surface electromyography (SEMG) to identify muscles tightening that are not needed for the task and how the muscle relaxes when not needed for the task performance. This monitoring can be done with a portable biofeedback device or multi-channel system when walking or performing the exercises. Patients can even use a single channel SEMG at home.

When working to improve ROM and physical function, the following rules are recommended:

1. Maintain diaphragmatic breathing – rhythm or tempo may change but the breath must be generated from the diaphragm with emphasis on full exhalation. Use strain gauge feedback and/or SEMG feedback to monitor and train effortless breathing. Strain gauge feedback is used to teach a slower and diaphragmatic breathing pattern, while SEMG recorded from the scalene to trapezius is used to teach how to reduce shoulder and ancillary muscle tension during inhalation
2. Perform activities or stretching/strengthening exercises that may trigger or aggravate pain during the exhalation phase of breathing.
3. Use the minimum amount of tension necessary for the task and let unnecessary muscles remain relaxed. Use SEMG feedback recorded from muscles not needed for the performance of the task to teach patients awareness of inappropriate muscle tension and to learn relaxation of those muscles.
4. Quickly release muscle tension when the task is accomplished. Use SEMG feedback to monitor and show that the muscles are completely relaxed. If rapid relaxation is not achieved, teach the subject to first relax before repeating the muscle activity.
5. Perform the exercises as if you have never performed them and do them with a childlike, beginner's mind, and exploratory attitude (Kabat-Zinn, 1990).

Movement and exercise can be taught as pure physical exercise, movement reeducation or youthful playing. Physical exercise is necessary for strength and endurance and at the same time, improves our mood (Thayer, 1996). However, many exercises are considered a burden and are often taught without a sense of lightness and fun, which results in the patient thinking in terms that are powerless and helpless (depressive)—"I have to do them." Helping your patients to understand that exercise is simply a part of every day life, that it encourages healing and improves health, and that they can "cheat" at it, may help them to reframe their attitudes toward it and accomplish their healing goals.

Pure Physical Exercise—Enjoyment through Strength and Flexibility

The major challenge of structured exercises is that the person is very serious and strives too hard to attain the goal. In the process of striving, the body is often held rigid: Breath is shallow and halted and shoulders are slightly braced. Structured exercises are very helpful for improving ROM and strength. Maintaining a daily chart is an excellent tool to show improvement (e.g., more repetitions, more weight, increased flexibility). When using pure exercise, remember that injured patients often have a sense of urgency – they want to get well quickly and, if work stress was a factor in developing pain, they often rush when they need to meet a deadline. As much as possible make the exercise fun. Help the patient understand that he can be quick while not rushed. For example, monitor SEMG from an upper trapezius muscle using a portable electromyograph. Begin by walking slowly. Add a ramp or step to ensure that there is no bracing when climbing (a common occurrence). Walk around the room, down the hall, around the block. Maintain relaxed shoulders, an even swing of the arms, and diaphragmatic breathing. Walk more quickly while emphasizing relaxation with speed rather than rushing. Go faster and faster. Up the stairs. Down the stairs. Walk backward. Skip. Hop. Laugh.

Movement Reeducation – Be 'Oppositional' And Do It Differently

Movement reeducation, such as Feldenkrais, Alexander Technique or Hannah Somatics, involves conscious awareness of movement (Hanna, 1988; Murphy, 1993). Many daily patterns of movement become imbedded in our consciousness and, over the years, may include a pain trigger. A common trigger is lifting the shoulders when reaching for the keyboard or mouse. Patients suffering from thoracic outlet syndrome (TOS) often have such patterns. A keyboard can often inadvertently cue the patient to trigger this dysponetic, and frequently painful, pattern. Have the patient do movement reeducation exercises in which they are guided through practices in which they have no expectancy and the movements are novel. The focus is on awareness without triggering any fight/flight or startle responses.

Ask the patient to explore performing many functional activities with the opposite hand, such as brushing her hair or teeth, eating, blowing her hair dry, or doing household chores, such as vacuuming. (Try this for yourself, as well!). Be aware of how much shoulder muscle tension is needed to raise the arms for combing or blow-drying the hair. Explore how little effort is required to hold a fork or knife (you might want to do this in the privacy of your own home!). Do movements differently such as, practicing alternating hands when leading with the vacuum or when sweeping, changing routes when driving/walking to work or the store, getting out of bed differently. Or, break up habitual conditioned reflex patterns such as eye, head and hand coordination. For example, when doing a movement, slowly rotate your head from left to right and simultaneously shift your eyes in the opposite direction (e.g., turn your head fully to the right while shifting your eyes fully to the left, and then reverse) or before reaching forward, drop your elbows to your sides then, bend your elbows and touch your shoulders with your thumbs then, reach forward. Often, when we change our patterns we increase our flexibility, inhibit bracing and reduce discomfort.

Free Your Neck and Shoulders*

--Push away from the keyboard and sit at the edge of the chair with your knees bent at right angles and your feet shoulder-width apart and flat on the floor. Do the following movements slowly. Do NOT push yourself if you feel discomfort. Be gentle with yourself.
--Look to the right and gently turn your head and body as far as you can go to the right. When you have gone as far as you can comfortably go, look at the furthest spot on the wall and remember that spot. Gently rotate your head back to center. Close your eyes and relax.
--Reach up with your left hand; pass it over the top of your head and hold on to your right ear. Then, gently bend to the left lowering your elbow towards the floor. Slowly straighten up. Repeat for a few times feeling as if you are a sapling flexing in the breeze. Observe what your body is doing as it bends and comes back up to center. Notice the movements in your ribs, back and neck. Then, drop your arm to your lap and relax. Make sure you continue to breathe diaphragmatically throughout the exercise.
--Reach up with your right hand and pass it over the top of your head and hold on to your left ear. Repeat as above except bending to the right.

--Reach up with your left hand and pass it over the top of your head and hold on to your right ear. Then, look to the left with your eyes and rotate your head to the left as if you are looking behind you. Return to center and repeat the movement a few times. Then, drop your arm to your lap and relax for a few breaths.
--Again, reach over your head with your left hand and hold onto your right ear. Repeat the same rotating motion of your head to the left except that your eyes look to the right. Repeat this a few times then, drop your arm to your lap and relax for a few breaths.
--Reach up with your right hand and pass it over the top of your head and hold on to your left ear. Then, look to the right with your eyes and rotate your head to the right as if you are looking behind you. Return to center and repeat a few times. Then, drop your arm to your lap and relax for a few breaths.
--Again, reach over your head with your right hand and hold onto your left ear. Repeat the same rotating motion of your head to the right except that your eyes look to the left. Repeat this a few times then, drop your arm to your lap and relax for a few breaths.
--Now, look to the right and gently turn your head and body as far as you can go. When you can not go any further, look at that point on the wall. Did you rotate further than at the beginning of the exercise?
--Gently rotate your head back to center, close your eyes, relax and notice the feeling in your neck, shoulders and back.

*This practice was adapted from a demonstration by Sharon Keane and developed by Ilana Rubenfeld (2000).

Youthful Playing – Pavlovian Practice

Remember the story of Pavlov in the hospital? Many, including his family, thought he was slipping into death when he quietly lay in his hospital bed and gently played with a bowl of water and dirt. Yet, the next morning he awoke and ate a hearty breakfast. Soon he was out of the hospital. Pavlov knew that evoking the playful joy of childhood would help to encourage mental and physical healing (Peper, Gibney, & Holt, 2002). Having patients play can encourage laughter and joie de vivre, which helps in physical healing. Often being involved in childhood games or actually playing these games with children removes one from worries and concerns—both past and future—and allows one to be simply in the present. Just being present is associated with playfulness, timelessness, passive attention, creativity and humor. A state in which one's preconceived mental images and expectancies—the personal, familial, cultural, and healthcare provider's hypnotic suggestions—are by-passed and for that moment, the present and the future are yet undefined. This is often the opposite of the patient's expectancy. Namely, the past experiences and the diagnosis create a fixed mental image that expects pain and limitation.

Explore some of the following practices as strategies to increase movement and flexibility without effort and to increase joy. Use your creativity and explore your own permutations of the practices. Observe how your mood improves and your energy increases when you play a childhood game instead of an equivalent exercise. For example, instead of dropping your

hands to your lap or stretching at the computer terminal during a micro- or meso-break[ii], go over to your coworker and play "pattycake." This is the game in which you and your partner face each other and then clap your hands and then touch each other's palms. Do this in all variations of the game.

For increased ROM in the shoulders explore some of the following (remember the basics: diaphragmatic breathing, minimum effort, rapid release):

Ball Toss: a hand-sized ball that is easily squeezed is best for this exercise. Monitor respiration patterns, and SEMG forearm extensors and/or flexors, and upper trapezii muscles. Sit quietly in a chair and focus on a relaxed breathing rhythm. Toss the ball in the air with your right hand and catch it with your left hand. As soon as you catch the ball, drop both hands to your lap. Toss the ball back only when you achieve relaxation—both with the empty hand and the hand holding the ball. Watch for over-efforting in the upper trapezii. Begin slowly and increase the pace as you train yourself to quickly release unnecessary muscle tension. Go faster and faster (just about everyone begins to laugh, especially each time they drop the ball).

Ball Squeeze/Toss: Expand upon the above by squeezing the ball prior to tossing. When working with a patient, call out different degrees of pressure (e.g., 50%, 10%, 80%, etc.). The same rules apply as with the ball toss.

Ball Hand to Hand: Close your eyes and hand the ball back and forth. Go faster and faster and add ball squeezes prior to passing the ball.

Gym Ball Bounces: Sit on a gym ball and find your balance. Begin bouncing slowly up and down. Reach up and lower your left then, right hand. Abduct your arms forward then, laterally. Turn on the radio and bounce to music.

Simon Says: This can be done standing, sitting in a chair or on a gym ball. When on a gym ball, bounce during the game. Have your patient do a mirror image of your movements: reaching up, down, left, right, forward or backward. Touch your head, nose, knees or belly. Have fun and go more quickly.

Back-To-Back Massage
With a partner stand back-to-back. Lean against each other's back so that you provide mutual support. Then each rub your back against each other's back. Enjoy the wiggling movement and stimulation. Be sure to continue to breathe.

Summary: An Attitude of Fun

In summary, it is not what you do; it is the attitude by which you do it that affects health. From this perspective, flexibility and movement are enhanced, discomfort decreased and health increased when exercises are performed with joy and experienced as fun. Inducing laughter promotes healing and disrupts the automatic negative hypnotic suggestion/self-

images of what is expected. The patient begins to live in the present moment and thereby decreases the anticipatory bracing and dysponetic activity stirred-up by striving. By decreasing striving and concern for results, patients may allow themselves to perform the practices with a passive attentive attitude that may facilitate healing. For that moment the patient forgets the painful past and a future fraught with promises of continued pain and inactivity. Instead, the moment is lived in a joyful present—one in which the pain cycle is interrupted and which can provide hope and a glimpse into a healthy future.

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[i] Dysponesis involves misplaced muscle activities or efforts that are usually covert and do not add functionally to the movement. From: Dys" meaning bad, faulty or wrong, and "ponos" meaning effort, work or energy (Whatmore and Kohli, 1974)

[ii] A meso-break is a 10 to 90 second break that consists of a change in work position, movement or a structured activity such as stretching that automatically relaxes those muscles that were previously activated while performing a task.