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Ellen Broach

University of South Alabama, ebroach@southalabama.edu

Alexis McKenney

Florida International University

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Social Fun and Enjoyment: Viable Outcomes in Aquatics for Individuals With Physical Disabilities

Ellen Broach and Alexis McKenney

This manuscript examines the literature pertaining to the effects of enjoyment and social fun and their application to individuals with disabilities in goal-oriented aquatic interventions. Literature related to the effects of positive emotion, disability issues related to positive emotion states, the nature of the aquatic environment, and programs that may facilitate positive emotions are examined. Research studies support the belief that participation in goal-oriented aquatics programs can provide individuals with realistic solutions for not only maintaining physical fitness and achieving rehabilitation goals, but also for attaining fun or enjoyment states that improve health and longevity. The paper highlights the implications of enjoyment and social fun states, generally and goal-oriented aquatic interventions, more specifically.

Finding happiness is the underlying motive for almost everything people do (Csikszentmihalyi, 1990; James, 1902; Myers, 1993). While positive emotion is often marginalized, one's state of enjoyment or unhappiness affects all aspects of that person's life. Individuals who have negative mood states are self-preoccupied and depressed (Myers, 1993). Negative moods are costly because they cause reduced activity levels, emotional difficulties, and increased days sick from work (Lyubomirsky, Sheldon, & Schkade, 2005). Lyubomirsky and colleagues added that people who are happy perceive their life as safer, make decisions more easily, are more cooperative, live healthier, are more energized, and are more satisfied than persons who are not happy. Individuals with positive mood states exhibit broadened thinking, playfulness, and enhanced creativity as well (Csikszentmihalyi, 1996; Fredrickson & Branigan, 2005; Myers, 2000).

While some individuals with disabilities find land-based physical activity difficult, therapeutic activity in the water provides a context in which individuals can typically participate with enhanced freedom of movement, sense of control, independence, less muscle stress, less energy expenditure, less guarded actions associated with fear of falling (Broach & Dattilo, 1996; Broach, 1997; Champion, 1990), and improved mood states (Becker, 2011). Because aquatic activity for people with disabilities is often more conducive to independent participation than

Ellen Broach is with the University of South Alabama, Health Physical Education and Leisure Studies in Mobile, AL. Alexis McKenney is with the Leadership and Professional Studies Department at Florida International University in Miami.

many traditional land-based exercise programs, goal-oriented aquatic programs may facilitate positive emotions that result in adherence to the activity (Broach & Dattilo, 2003) and improved health and well-being (Seligman, 2002).

Exploring and understanding the nature of positive emotion can help aquatic practitioners appreciate their potential to make a difference in the lives of other people and better inform practice. A discussion of human potential beyond physical outcomes may seem out of the ordinary for some practitioners who provide aquatic interventions or exercises for individuals with disabilities; however, the water is an excellent environment for facilitating enjoyment and fun. The literature provides a strong rationale for including holistic goals in treatment that focus on increasing positive emotions that improve overall health (Carruthers & Hood, 2004). Many diseases and conditions lead to the development of secondary impairments that are not automatically reversed by resolution of the underlying pathology. For example, a physical rehabilitation program designed to restore strength in upper extremities for a person with a spinal cord injury does not automatically translate into improved mood or increased recreational or social outlets, all of which may have deteriorated during the course of acute injury. People without social-recreational roles may spend more time in bed and get less exercise, ultimately leading to boredom, skin breakdown, or weaknesses (Carruthers & Hood, 2004). With a comprehensive understanding, aquatic practitioners will be better able to articulate to clients, allied therapists, payers, administrators, and the general public why positive emotion states are important and, more importantly, why the aquatic environment is an ideal setting to facilitate the physical and positive emotion outcomes that promote continued health after treatment.

A push for holistic treatment that includes positive emotion in rehabilitation is emphasized by the World Health Organization (WHO, 2002, 2005, 2009). The WHO (2009) suggested that healthcare organizations should turn their attention from repairing weakness and damage to promoting the highest qualities of life. Specifically, the WHO confirmed that positive emotions potentially minimize and delay the emergence of disabilities and promote more rapid recovery from illness. What's more, people who are happier include individuals who are more active and/or socially engaged (Carruthers & Hood, 2004). The WHO added that epidemiological studies have shown reduced morbidity and delayed mortality among people who are socially integrated. Therefore, changes to the person's social and physical environment to better facilitate activity involvement, participation in life, and social support are evaluated as part of the WHO International Classification of Functioning (ICF; WHO, 2009). In general, health care is shifting its focus from acute care to services and outcomes that better integrate people into the communities where they live to promote continued happiness and well-being. Establishing outcomes that include positive emotion states can improve the potential for active participation and health in life.

Cross-cultural evidence indicates an affirmative relationship between enjoyment, social engagement and fun, physical activity, physical health, and emotional health in adolescence and later life (Buckworth & Dishman, 2002; Carruthers & Hood, 2004; Henderson & Ainsworth, 2002). Positive emotions that involve enjoyment, interest, or fun have been found to be predictors of decreases in cardiovascular accidents (Ong & Allaire, 2005), increased years of living (Danner, Snowdon, & Friesen, 2001; WHO, 2005), improved physical health (Ostir, Markides, Black,

& Goodwin, 2000), resistance to disease (Davidson et al., 2003), improved brain system function (Burgdorf & Panksepp, 2006), and subjective pain levels (Gil et al., 2004). In addition, positive emotion can improve attention and activity repertoires (Fredrickson & Branigan, 2005), activity adherence (Wankel, 1993), creativity (Csikszentmihalyi, 1996), intuition (Bolte, Goschke, & Kuhl, 2003), human flourishing (Keyes, 2002), subjective well-being (Diener, 2000), and decrease responses to stress and adversity (Fredrickson, Tugade, Waugh, & Larkin, 2003).

While well-controlled experimental research specific to aquatic therapy is sparse, there have been some studies documenting physical, psychological, and psychosocial improvements from aquatic interventions and water immersion in general. Through aquatic interventions or immersion, researchers have documented that participants improved circulation, mobility, strength, range of motion, pulmonary function, muscular and cardiovascular endurance, relaxation, and decreased pain and bone loss (Becker, 2011; Broach and Dattilo, 1996). These authors also cited studies that found improved mood, self-esteem and body image, and decreased anxiety and symptoms of depression after structured aquatic interventions. In addition to the noted functional outcomes, aquatic interventions can promote the development of water activity as a lifetime leisure skill, which can subsequently contribute to lifelong happiness, health, and wellness.

Extending what has been documented relative to enjoyment and social fun, we provide a review of diverse material designed to illustrate how these concepts relate to aquatic activity and to the experience of individuals with disabilities. Specifically, definitions of the positive emotions of enjoyment, social fun and pleasure are followed by a brief discussion specific to why the aquatic environment is conducive to promoting enjoyment and social fun for individuals with disabilities. Some authors cite health and longevity benefits while others examine value as it pertains to adherence and social psychological outcomes. While this work demonstrates value, few studies have been conducted that highlight outcomes specific to positive emotions in an aquatic environment. Consequently, this paper provides a section that includes a review of research that supports the value of engendering enjoyment in goal-oriented aquatic programs. Finally, we conclude with suggestions for aquatic practice with individuals who have disabilities with an emphasis on the incorporation of enjoyment and social fun as a means for achieving health. Because water is an environment that can lead to positive emotion states, our hope is that this document will increase practitioner curiosity about positive emotion, not only to accept the ideas presented, but to conduct additional studies that might shed light on the value of positive emotion through aquatic interventions.

Disability, Enjoyment, and Social Fun

An acquired physical disability may result in secondary issues related to emotional states as indicated by low positive mood, self-esteem, self-determination, as well as increases in stress levels, anger, anxiety, and depression (Jang, Haley, Small, & Mortimer, 2002; National MS Society, 2002; Von Korff, Ormel, Katon, & Lin, 1992; Wiederholt, 1995). While negative emotions are inevitable and even useful at times, it is important to examine ways to reduce and/or redirect extreme or contextually-inappropriate negative emotions that can cause anxiety disorders (Ohman, 1993), clinical depression (Nolen-Hoeksema, Morrow, & Fredrickson, 1993), and

compromised immune function (O'Leary, 1990). Regular physical activity, such as aquatic exercise and swimming, can be an important aspect of treatment of physical impairments and associated problems with emotional states. While health professionals recommend that people engage in physical exercise to improve their health, many individuals with disabilities find it difficult to perform exercise on land due to physical limitations (Broach & Dattilo, 2003; Campion, 1990).

Enjoyment

Enjoyment is a positive emotion experienced as a result of actively participating in, and focusing one's attention on, an activity that is intrinsically motivated and freely chosen (Csikszentmihalyi, 1988; Dattilo, Kleiber, & Williams, 1998). These authors added that enjoyment occurs when the activity presents a set of challenges matched to the person's skills and is associated with a feeling of control. For example, if the activity challenge is matched to a person's skill levels during an aquatic exercise intervention, the individual will most likely (a) focus on problem solving during the exercise, (b) decipher what actions will result in successful moves, and (c) achieve personal goals. The emotional result is an experience of "enjoyment" and a desire to repeat the experience. Enjoyment occurs when a person feels a sense of control and accomplishment. When challenge associated with an activity is less than the individual's skill, boredom can result. Similarly, a challenge that exceeds an individual's skill level results in the person experiencing anxiety (Csikszentmihalyi, 1988, 1990, 1996).

The aquatic environment has proven to be unique in that, if used properly, it can expose a client to many different therapeutic effects during a single session. For example, an individual with partial paralysis of all four extremities in a typical aquatic exercise session can be exposed to hydrostatic pressure that reduces swelling in the lower extremities while increasing circulation to all the limbs. At the same time, if a client moves an arm, it is done so through an increased range of motion compared with its capability on land. In addition, the client can exert muscle forces to strengthen the muscles across the upper extremities while preserving strength elsewhere. If the same client is ambulating, she is doing so with reduced forces of gravity and greater independence due to buoyancy while improving gait and balance. Most importantly, clients' increased skill level and sense of control in the water enable greater opportunities for meeting the new and varied challenges of the aquatic exercise activity. Thus, conditions are created that enhance concentration, effort, a sense of control, and competence, while providing greater activity options. These conditions are optimal for an experiential outcome of enjoyment (Dattilo & Kleiber, 1993). Dattilo and Kleiber added that an activity is considered enjoyable when one continues with no apparent reason beyond the activity itself. Ultimately, the experience of enjoyment is in turn important because it produces a desire to repeat the aquatic activity.

In addition to the ratio of challenge: skill benefits, there may be additional significant factors that come into play specific to aquatic immersion that contribute to positive emotion. According to Becker (2011), research indicates that aquatic immersion can result in mood changes associated with parasympathetic nervous system (PNS) activity becoming more prevalent than sympathetic nervous system (SNS) activity. The parasympathetic and sympathetic nervous systems are part of

the autonomic nervous system. The SNS action mobilizes the body's resources under stress by inducing "fight-or-flight" responses. The PNS generally works to promote maintenance of the body at rest. While the functions of both systems are complicated, the above description is a common rule of thumb. Becker cited various studies that yielded findings specific to improved mood states and increases in plasma dopamine levels from warm water immersion or water exercise. Plasma dopamine levels correlate positively with mood state (Becker, 2011). Similarly, Becker noted that both anxiety and depression are reduced after water- and land-based exercise. Becker contended that the important outcomes associated with mental health benefits of immersion need further study; however, the effect produced does have important implications for positive emotions from aquatic immersion.

Csikszentmihalyi (1990) explained that life activities are initiated with the intent of experiencing enjoyment, and this enjoyment is vital to health because if one is continuously bored or anxious, depression and hopelessness result. Csikszentmihalyi (1996) contended that enjoyment appears to be the mechanism by which natural selection operates to ensure that humans evolve and become more self-aware and complex. Csikszentmihalyi emphasized that enjoyment pushes people to do things beyond their present ability. Therefore, ideally, activities provided through aquatic exercise or therapy should include procedures that facilitate challenges that promote enjoyment (Broach, Dattilo, & McKenney, 2007).

Social Fun

Fun addresses the social determinant of positive emotion. The most commonly cited description of fun is based on the research of Podilchak (1991a, 1991b). Podilchak (1991a) used a qualitative analysis of 49 interviews (participant mean age = 22 years) and field observations to examine the meanings of fun and enjoyment. From an analysis of emergent themes he found that fun included (a) active involvement, (b) a feeling of control, (c) successful engagement with another individual, and (d) a resulting positive state. Podilchak concluded that fun is important for the social development of the self because it brings equality to social interactions.

Although Podilchak (1991b) stated that enjoyment is similar to fun because they both involve concentration, a feeling of control, a centering of attention, and intrinsic motivation to participate, "Fun is not only absorption in the activity, it is the reframing of it with others that makes it fun, resulting in social learning" (p.140). Furthermore, fun is an important determinant to activity loyalty (Broach 1997; Wankel, 1993). While some authors use the term "fun" and "enjoyment" interchangeably, Podilchak emphasized that enjoyment occurs as individuals become more focused on the activity rather than on social interaction. For example, Jayne, who has multiple sclerosis, is ambulatory in the water but uses a wheelchair to function in most land-based activity. Jayne is participating in an activity in which she must stand erect while keeping the ball up in the air during water exercise. Jayne finds that in the equalizing environment of the water she has the skills to meet the challenge along with other participants. Jayne becomes absorbed in the activity, is able to meet her goals, and feels a sense of control while interacting with her playing partner(s). Consequently, the outcomes she experiences include a feeling of having fun with the other people and experiencing a desire to participate in the activity again.

To reinforce the importance of socially engaged activity and fun, Ong and Allaire (2005) assessed positive emotions, social connectedness, and cardiovascular functioning of 33 older adult volunteers. Measurements included the Positive Relations with Others subscale of the Psychological Well-being Measure (Ryff & Keyes, 1995), the Positive and Negative Affect Scale (Watson, Clark, & Tellegen, 1988), and blood pressure. Social connectedness was not related to negative affect; however, it was significantly correlated with daily positive affect. Furthermore, individuals who were socially connected were more likely to intentionally engage positive emotions to defend against negative emotions, as well as engender longer periods of positive emotion. Overall, the researchers found that individual social and enjoyable contexts have a strong influence on health and well-being. Clients who are involved in rehabilitation environments that include supportive social interactions with other people and a prescribed challenge do better than individuals who do not complete their rehabilitation in similar environments. While several limitations to these generalizations were noted, results supported the view that positive emotions and social connectedness are important for older adults.

Pleasure Is Not Fun

Aquatic practitioners who work with individuals with disabilities should understand that the positive emotions of enjoyment and social fun are different from positive affect that results from participating in pleasure producing activities that involve sensory processing such as those experienced through touch and hedonic tastes (Broach, Dattilo & McKenney, 2007). Enjoyment and fun are derived from different behaviors than pleasure seeking and result in different classes of brain activities, with separate but overlapping neurological sources (Burgdorf & Panksepp, 2006). Burgdorf and Panksepp explained that there is a positive affect system designed to reinforce skill development and reward seeking that is dependent in part on the dopamine system in the ventral striatum of the central nervous system. This growth producing energy results from emotions related to fun or enjoyment. The positive affect system that processes sensory or hedonistic *pleasure* involves the opiate and GABA system in the frontal cortex and ventral striatum. The authors suggested that it is important to recognize this distinction to understand how pleasurable behaviors result in different brain activity, statements of experience, and consequential health outcomes.

To conclude, enjoyment and fun are both defined primarily by emotions, with enjoyment being more self-oriented (internal) and fun being more closely tied to social interaction in activity. Although there is limited research on the benefits of aquatic activity related to enjoyment or fun, authors have long emphasized the importance of transitioning the person with a disability from the clinical environment into enjoyable aquatic programs in the community (Becker & Larson, 2011; Broach & Dattilo, 1996). While important for both enjoyment and fun, “goals” or specific outcomes are more associated with enjoyment while not as important to experiencing fun. A major advantage of the use of water for exercise and therapy is that aquatic practitioners can improve physical ability while experiencing a lifelong activity that can be enjoyed with other people. Once a person is independent in the water, opportunities for socialization, fun and enjoyment increase.

Fun, Enjoyment, and Goal-Oriented Aquatic Exercise: A Case Example

The equalizing properties of water that provide greater independence and freedom of movement (Becker, 2011) combined with a small group (when appropriate) and an aquatic intervention designed to include clear goals, immediate feedback on accomplishments, and challenges that meet the skill of the participant, may afford conditions for enjoyment (Csikszentmihalyi, 1990) or fun (Podilchak, 1991a). While aquatic interventions may promote development of an enjoyable lifetime activity, only one study has been conducted that examined the use of aquatic exercise to enhance enjoyment or fun (Broach, Dattilo, & McKenney, 2007). Implications of this study are outlined by Broach and colleagues in this section.

Broach and colleagues (2007) collected data using a single subject, multiple probe design across four participants with multiple sclerosis. Experiences were examined through social validity questionnaires and the development and administration of an enjoyment questionnaire that addressed items of participation that related to an enjoyment or fun experience. Specifically, the enjoyment questionnaire included the following nine items: (a) five items from the flow model (Csikszentmihalyi, 1990; challenge/skill ratio resulting in flow or enjoyment, satisfaction with performance, anxiety, boredom, and focused attention), (b) two items of intrinsic motivation (desire to continue, desire to be doing something else), (c) one item of social fun (enjoy others), and (d) one item of activity enjoyment. Content and face validity processes were conducted during instrument development that involved an extensive review of literature, reviews of the instrument by two flow researchers, and administration of the instrument designed to elicit feedback from participants who were engaged in water exercise classes. Preliminary concurrent validity was established with 185 college students in activity courses between the total score of the first seven items of the Experience Questionnaire that represented flow and intrinsic motivation conditions and ratings of activity enjoyment and enjoyment of others. Pearson correlations between the total score and activity enjoyment were high at 0.70 and moderate for enjoyment of others at 0.51. While mixed results prevented conclusions to be drawn regarding the overall experiences, all participants maintained or improved their scores on all items during the intervention and at the six-week follow-up.

Responses from social validity questionnaires in the Broach et al. study indicated that participants and family members perceived that the aquatic exercise had a positive effect on various physical behaviors, enjoyment, and fatigue. In addition, participants stated that they felt the most important outcome of aquatic exercise included increased freedom of movement, relaxation, energy, and social interactions. Freedom of movement and relaxation are influenced by the support offered by the water, the consequential reduction of effects of gravity, and physiological responses to immersion (Becker, 2011). Increased energy reported by participants was considered to be an indicator of a reduction in physical fatigue, which was one of the aims of the aquatic program.

Comments participants offered relative to social interaction were corroborated by findings put forth by Weiss and Jamieson (1989) when they examined perceptions

of social enjoyment among 90 of 100 participants who participated in an aquatic exercise program from eight weeks to five years. Participants demonstrated perceived improved emotional states in part because they viewed the aquatic exercise as a support group, they made new friends, and they found it easy to converse with other people. The aquatic exercise program required participants to engage in small groups that resulted in social contact during the program. Since social interactions have been found to promote activity adherence (Podilchak, 1991a), studies examining efforts to facilitate social fun in interactions that occur in conjunction with aquatic activity may be useful.

While Broach et al. (2007) acknowledged limitations related to the research design, they posited that the results of the study indicated that individuals with MS should be encouraged to participate in aquatic exercise with the intent of improving or maintaining positive emotions of enjoyment or fun for health and well-being. In addition, the researchers noted the significance of the single subject design across participants as the appropriate research design because many aquatic interventions with people who have disabilities are generally conducted one-to-one to meet specific treatment goals, large experimental studies are difficult to conduct and inappropriate due to diversity in patient characteristics. Therefore, single subject design provides an appropriate research method for examining mood states when large groups are not conducive to thorough examination. Although the nature of this design controlled for threats to internal validity, since the study was limited to only four participants, generalizations were limited without further replication.

Efficacy of Enjoyment and Social Fun

Benefits of participation in aquatic activity have been suggested to include improved mood (Berger & Owen, 1992) and decreased anxiety and depression (Stein & Motta, 1992; Weiss & Jamieson, 1989). We recommend assessing changes in activity enjoyment associated with aquatic exercise for individuals with disabilities due to the contentions that enjoyment or social fun generally leads to motivation to continue participation in activities (Wankel, 1993), improved health, and longevity (Seligman, 2002). The following sections include a brief discussion of outcomes of positive emotions related to activity adherence and health. While some of the research we reviewed does not specify aquatic interventions, they do explain outcomes that can increase aquatic practitioners' understanding of the importance of enjoyment/fun outcomes in aquatics.

Activity Adherence

Enjoyment or fun experienced as a result of participating in intrinsically-motivated activity positively influences adherence to the activity (Csikszentmihalyi, 1988; Wankel, 1993). Wankel added that while health benefits are the main reason for starting an exercise program, enjoyment and/or fun are the primary reasons participants continue; social reinforcement and friendship are additional factors that support continuation of programs. Activity adherence that results from positive emotional states is associated with an individual's health and longevity (Fredrickson & Losada, 2005)

In support of Wankel's contention, Broach (1997) analyzed qualitative field notes of participants in an MS water exercise program and identified themes related to enjoyment that included the importance of social interaction and a desire to continue the program. Interviews with participants with MS in the aquatic program revealed that although their initial reason for participation was to improve physical health, their desire to continue was attributed to conditions of enjoyment and social support. For example, one participant stated, "I was able to move my arms and legs . . . because of the water. I felt a connection with the water . . . I was in control of my body." Another participated stated, "When I went into the deep water I was able to move in ways that are normally very hard (on land)." When asked why she kept coming to class, one participant responded that she realized that she found something that made her very happy. She said, "I feel free and challenged, but I can meet the challenge." A fourth participant said, "I really look forward to the class. I enjoy being with the people" and added that "it is a bunch of people who have the same problem I do." This same participant stated that social support and a less patronizing environment were reasons why she continued to attend the program. In addition, participants said that although they were noncompliant to their prescribed home exercise programs, they were committed to the aquatic exercise program.

To examine effects of adherence to an aquatic exercise program on the quality of life of individuals with arthritis, Belza, Topolski, Kinne, Patrick, and Ramsey (2002) recruited 249 adults with osteoarthritis for a randomized 20-week arthritis exercise program ($n = 125$) or a wait list control group ($n = 124$). The researchers defined the "adherers" as the participants who attended at least 16 of the 20 weeks of aquatic exercise. The dependent measures included the Quality of Well Being Scale (Kaplan et al., 1989), Health Assessment Questionnaire (Fries, Spitz, & Young, 1982), and the Center for Epidemiological Studies Depression Scale (Kohout, Berkman, Evans, & Cornoni-Huntley, 1993). The exercise group adherers' scores indicated improved well-being, physical function, and quality of life when compared with the nonadherers and the control group. While the researchers acknowledged that the study had several limitations, they argued that adherence to this aquatic exercise program resulted in improved health.

In a later study, Kang, Ferrans, Kim, & Lee (2007) identified factors influencing long-term adherence to aquatic exercise in older women with arthritis (mean age = 66). Participants ($n = 72$) completed an aquatic exercise program (3 × wk for 6 wks) and underwent follow up for 6 months. At follow-up, women who continued aquatic exercise (adherence group, $n = 25$) had significantly higher scores than women in the nonadherence group ($n = 47$) in exercise self-efficacy ($p < .0001$) and group cohesion based on social aspects ($p = 0.009$). Group cohesion based on the interest in the exercise itself was not significantly different between the groups. Both groups reported experiencing similar barriers to exercise ($\rho = 0.78$). The findings provide insights helpful for the development of strategies to promote long-term adherence to this type of aquatic exercise. Specifically, according to Kang et al., the findings reinforce the importance of the fostering of exercise self-efficacy and social bonding during participation in aquatic exercise programs to facilitate long-term aquatic exercise adherence. Nevertheless, findings should be interpreted with some caution because of the non-randomized design resulting in questions about the strength of validity.

Health

While not examined so far in the aquatic literature, the importance of positive emotions to health and longevity has been documented. Outcomes of positive emotions include those pertaining to physical health (Ostir, Markides, Black, & Goodwin, 2000), immune system function (Davidson et al., 2003), longevity (Danner, Snowdon, & Friesen, 2001), and subjective pain levels (Gil et al., 2004). In addition, enjoyment resulted in improved attention, increased activity repertoires (Fredrickson & Branigan, 2005), creativity (Csikszentmihalyi, 1996), and decreased responses to stress and adversity (Fredrickson, Tugade, Waugh, & Larkin, 2003). The following includes a sample of significant research findings from studies conducted with large sample sizes.

Ostir, Markides, Black and Goodwin (2000) examined the effects of positive affect on functional status, mobility, and survival of older adults. The researchers used a sample of 2,282 individuals, ages 65–99, who reported no functional limitations in their baseline interviews. The researchers found that participants with high positive affect were half as likely to become disabled in activities of daily living, half as likely to have died during the four year follow-up, and two-thirds less likely to have a slow walking speed compared with those with lower positive affect scores. The researchers concluded that positive emotions have a protective effect against physical decline. Of course, because the investigators used correlational statistics, the lack of physical decline could as easily have accounted for the positive emotions rather than vice versa.

In another study, Richman, Kubzansky, Maselko, Kawachi, Choo, and Bauer (2005) examined positive emotions in conjunction with hypertension, diabetes, and respiratory track infections of 1,014 people who responded to a mailed questionnaire that assessed emotion. Respondents' medical records were examined over a two-year period. Higher levels of certain positive emotions were significantly associated with less hypertension, diabetes, and the likelihood of developing disease. The researchers' findings were in agreement with those of Ostir et al. (2000), suggesting that positive emotions may be associated with lower levels of disease development. It is important to note once again that correlational analyses do not necessarily indicate causation. Determining causation likely would require designing a prospective empirical intervention study.

In a study that involved an examination of the effects of positive emotions in early life on longevity, Danner, Snowdon and Friesen (2001) analyzed autobiographies of Catholic nuns (mean age = 22 years) for positive emotional content and compared their emotional ratings to survival 60 years later. Common confounding variables were reduced in this examination because the participants were similar in their reproductive and marital histories, social activities and support, occupations, income, access to health care, and they did not smoke or drink excessive amounts of alcohol. Danner and colleagues found a strong inverse association between positive emotional content in these writings and their longevity 60 years later ($p < .001$).

The effect of positive emotion on mortality and permanent institutional care were examined by Pitkala, Laakkonen, Strandberg, and Tilvis (2004) in a study that included 449 participants born in 1904, 1909, and 1914. The researchers assessed the participants initially and then 5 and 10 years later. Positive emotion was indicated when the participants answered "yes" to items of being satisfied with life, having

zest for life, having plans for the future, feeling needed, and seldom feeling lonely or depressed. To assess health, participants underwent assessments of health status, physical function, depression, and cognition. One-fifth of the participants were found to have a positive life orientation. In addition, the participants with the more positive life orientation had a significantly lower mortality rate than those with a less positive orientation in life. Further analysis indicated that positive emotion appeared to protect against permanent institutional care, but not against decline in mobility or cognition. These findings confirm and extend earlier studies in which positive emotion in life was found to protect health and well-being of older adults.

As can be seen from this brief review of relevant literature, investigations that involved large sample sizes have demonstrated strong positive relationships between affectivity and health. Nevertheless, even though the aquatic environment is conducive to promoting enjoyment outcomes, few studies in aquatics have specifically examined effects of interventions on positive emotion even though secondary symptoms associated with acquired physical disability may include depressed affect and mood alterations (Jang, Haley, Small, & Mortimer, 2002; National MS Society, 2002; Wiederholt, 1995). Knowledge of outcomes related to enjoyment and fun will enable practitioners to educate affected parties who have difficulty recognizing the essential nature and relationship of enjoyment and fun to overall personal well-being. We included research specific to positive emotion outcomes to emphasize that the importance of positive emotion extends beyond the idea of simply providing a “good time” for clients in aquatic rehabilitation. Until research on the effects of aquatics includes positive emotion outcomes, practitioners should consider the related research available on positive emotions effects on health to justify programs and treatment in aquatics.

Discussion

Results from numerous studies have demonstrated the physical value of goal-oriented aquatic programs (e.g., Broach & Dattilo, 2003; Driver, O’Connor, Lox, & Rees, 2004; Guillemain, Constant, Collin, & Boulange, 1994; Langridge & Phillips, 1988; Wang, Belza, Thompson, Whitney, & Bennett, 2007; Wyatt, Milam, Manske, & Deere, 2001). The water provides an environment for undertaking physiological events that can result in promoting positive mood and health. Furthermore, the water can provide an ideal environment for self-determined, independent, challenging activities resulting in supporting positive emotion; however, limited research has been conducted to examine the effects of planned enjoyable aquatic interventions on the enjoyment and fun experienced by participants. More inquiry is needed to provide insights into the importance of fun and enjoyment experiences for participants, why the water may facilitate these positive states, and the health outcomes resulting from fun and enjoyment in the water.

Enjoyment or fun often leads to motivation to continue participation in activities (Wankel, 1993) as well as improved health and longevity (Seligman, 2002). Although the results of the study by Broach et al. (2007) indicated that positive emotions were experienced during aquatic exercise, the validity of the questionnaire was not examined except for face, content and concurrent validity with ratings of enjoyment. Other validated social validity questionnaires have revealed that par-

ticipants and family members perceived that the effects of aquatic participation were positive and that the most important outcomes included increased freedom of movement, relaxation, energy, and social interactions. Because the outcomes that promote activity adherence (Podilchak, 1991a) are inherent in most water activities, future examinations would likely result in the emergence of additional important insights pertaining to the benefits of goal-oriented aquatic programs.

Because positive emotions are related to good health (Fredrickson & Losada, 2005), an examination is necessary of the potential means and mechanisms by which improved health is achieved. First, some literature provides analyses of biological factors associated with positive emotion that may play a role in promoting better health (Buckworth & Dishman, 2002; Burgdorf & Panksepp, 2006). In addition, positive emotions seem to promote greater life activity in general and potentially greater motivation toward self-care (Buckworth & Dishman, 2002). Positive emotions are furthermore associated with increased social interactions and self-determination that can act as a buffer to stress and greater coping capabilities (Coleman & Iso-Ahola, 1993; Fredrickson et al., 2003). These studies merit further examination because they indicate outcomes specific to positive emotions that are similar to results from studies that examined the relationship of activity adherence to aquatic activity.

Implications

The review of literature reinforced the importance of using activities that facilitate enjoyment or fun through challenge and social interactions. From the perspective of aquatic practices, we recommend noting the following implications. First, aquatic interventions that consider the role of *intrinsic factors* that enhance fun, enjoyment, and adherence may prove worthwhile to study. Practitioners who provide aquatic programs for individuals with disabilities should work to create treatment contexts that are appealing to their clientele. They should emphasize the importance of experiences that are freely chosen and thus intrinsically motivated (i.e., those that are fun and/or enjoyable in and of themselves) as means to encourage future activity participation and adherence.

Second, the literature supports practitioners increasing the *variety* and meaningful nature of aquatic interventions for participants to prevent problems with habituation and boredom. Early postdisability emphasis on pleasant activities aimed at decreasing the intensity and frequency of unpleasant events through increasing the *rates* of engagement in pleasant activities is more important than the intensity of engagement (Lewinsohn & Gotlib, 1995).

Third, we found that states which are enjoyable and fun are largely determined by our individual outlook (Myers, 1993). We recommend that aquatic practitioners could help clients find positive meaning in their experiences by *reframing adverse events* through reinforcing the positive aspects of the aquatic exercise activity. The positive experiences might be heightened as participants learn how they can benefit from aquatic intervention that they enjoy.

Fourth, *engage the individual client's unique skills*. Aquatic practitioners are encouraged to create an organizational environment that encourages outcomes through challenges that facilitate absorption in the activity which result in positive emotions and a desire to continue. These individualized appropriate challenges pro-

vide participants with a sense of being in control and feelings of self-determination during treatment. Social fun and enjoyment are often byproducts of a “flow” state where a person is absorbed in a task that is challenging but not overwhelming. A zone lies between overwhelming anxiety and the boredom of no challenge where people experience an optimal state of absorption in an activity called “flow” (Csikszentmihalyi, 1996). People who experience flow states report enjoyment and improved self-awareness after the experience.

Finally, the literature strongly supports *promoting relationships* among participants. When appropriate, small group rather than individual activities may enhance fun, social learning and adherence. Friendships with those who care about and understand personal circumstances can help in difficult times. Myers (1993, 2000) added that those supported by close friendships are likelier to state that they are “very happy.” People have an inherent need for social support (Coleman & Iso Ahola, 1003) and aquatic activity is ideal for facilitating social support and friendships (Broach, 1997). While some aquatic activities can be provided in an inclusive environment, it is beneficial to have specialized groups (e.g., arthritis, multiple sclerosis, postpolio, parent/child swim classes for children with disabilities) that can serve as an appropriate support group for those who choose to participate. Social fun represents a vital aspect of goal-oriented aquatic interventions (Ong & Allaire (2005). High levels of fun or enjoyment are more likely to be experienced when a person is focused outwardly on physical or social activities (Csikszentmihalyi, 1996; Fredrickson & Losada, 2005).

Conclusion

Our primary goal for this review and analysis was to increase aquatic practitioners’ appreciation of the importance of positive emotion and to recognize the value of participants’ reactions to aquatic interventions that involve social fun and enjoyment. Given that aquatic activity is generally provided in settings that enhance freedom of movement and control, potential enjoyment, and activity adherence, additional examinations that potentially impact practice have merit. In addition to the information that might be useful to practitioners, this review of the literature and discussion intends to encourage researchers to extend lines of research as a result of our summaries and suggestions.

Well-being does not primarily depend on physical ability, what other people think, or material possessions. Health and well-being being does, however, depend on finding and embracing those experiences that result in positive emotions and the motivation to live well. Because of this, an important purpose of aquatic interventions for individuals with disabilities should be to implement treatment that brings about the additional benefit of enjoyment and/or social fun. One might argue that, when appropriate, a purpose of treatment services, including aquatic interventions, ought to bring about enjoyment and/or social fun. Most scholars of positive emotions agree that practitioners should use treatment interventions that facilitate positive emotions (e.g., Seligman, 2002).

Regardless of which interventions are used, aquatic interventions should emphasize opportunities for individuals to experience themselves in ways that are new while learning to move their bodies in more efficient and effective manners,

rather than simply exercising in the water for its own sake. Aquatic interventions should be presented as opportunities for individuals to enjoy themselves and explore what they can do in the water. People are more motivated to recover their health and remain healthy when treatments include experiences of intrinsic meaning and worth that result in positive emotions (Seligman, 2002). Petajan and White (1999) contended that for individuals with disabilities, the motivation to exercise is often not adequate for adherence in the absence of group support and/or pleasant experiences.

For happiness and health, life should include regular experiences that elicit positive emotions which result in greater self-awareness of one's skills and improved physical outcomes. Based on what is known about the importance of positive emotion, individuals who work in health-related services have a responsibility to make adequate provisions for the outcome of enjoyment and social fun for clients' immediate health and for the sake of the lasting effect of enjoyment upon habits and longevity. Aquatic interventions potentially provide an ideal medium for realizing these goals.

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