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Aquatic exercise : program profile and perceived benefits on people with arthritis

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Aquatic Exercise: Program Profile and Perceived Benefits On People With Arthrtitis

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Abstract

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ABSTRACT:

The main focus of this project was to research the program profiles and perceived benefits on people with arthritis in aquatic exercise programs. Fifty-five participants in aquatic exercise classes were asked to respond to a questionnaire and comparisons were made between arthritic and non-arthritic groups.

A majority of the individuals in the aquatic exercise program reported having arthritis. Approximately half of the respondents reported having participated in the program for more than one year. More than half of the individuals reported exercising three to four times per week. Two of the program sites employed certified aquatic instructors. All four of the sites required pre-screening physicals or surveys before participation could begin.

The aquatic exercise programs currently available to the general public are reaching people with arthritis. These individuals are perceiving benefits in both occupational and functional activities. Aquatic exercise programs are currently not following any specific guidelines for class activity.

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Purpose of the Study

The purpose of this study is to identify the perceived benefits of aquatic exercise participants, specifically the arthritic population. Additionally, aquatic program profiles will be presented.

Need for Study

There has been an increased interest in the effects of aquatic therapy and exercise. There has been a significant amount of literature in recent years concerning the possible benefits. However, few studies have been conducted that demonstrate the perceived benefits of the participants. The current studies do not investigate the personal profiles of the aquatic participants. This information may be utilized to develop goals and personalize aquatic programs.

Significance of the Study

The significance of this study is to examine the profiles of clients participating in aquatic exercise programs and their perceived benefits. This will add information to the literature currently available.

Review of Literature

Arthritis

Arthritis is a condition in which bone joints become inflamed and enlarged, causing pain and decreasing range of motion. Other parts of the body such as internal organs and skin can be affected. Currently, the cause of arthritis is not completely understood. There are more than 100 different types of arthritis. Osteoarthritis, fibromyalgia, and rheumatoid

arthritis are just three common types of arthritis. Depending on the type of arthritis, treatment will vary. Treatments may consist of pharmacological or nonpharmacological interventions, more severe cases may require surgical treatment (Hochberg et al, 1995).

Osteoarthritis

Osteoarthritis is also known as degenerative arthritis due to the breakdown of bone and cartilage, causing pain and stiffness (Prentice, 1994). Osteoarthritis is a non-systemic, nongenetic condition. Both men and women are affected equally after the age of 45. Weight-bearing joints and fingers are usually affected, these joints include feet, hips, knees and spine. Osteoarthritis is the knee is increased by fourfold when the person is obese (Gabriel, 1996). Other joints are rarely affected, except as a result of injury. Strengthening the muscles that surround the effected joint will allow the surrounding cartilage to reduce and prevent bone friction.

Fibromyalgia

On the other hand, fibromyalgia most often affects the muscles and their attachments to the bone. Currently, the cause and cure for the disease are unknown. Patients may exhibit a variety of symptoms, including fatigue, stiffness, migraine headaches, point tenderness as well as other symptoms. Conditions such as irritable bowel and bladder and temperomandibular joint (TMJ) dysfunction may also present themselves. Women are more commonly affected by fibromyalgia; however, many people are not diagnosed properly because fibromyalgia mimics many other disorders and has many symptoms (Arthritis Foundation, 1996).

Rheumatoid Arthritis

Rheumatoid arthritis is due to genetic factors which cause a deficiency in the immune system. This in tum causes inflammation starting in the joint lining which

prevents the joint from moving freely and causing severe pain during movement.. When this progresses it causes damage to both cartilage and bone. Rheumatoid arthritis also affect women more often than men. Typically, the same joint on both sides of the body is affected.

Elderly-onset rheumatoid arthritis (BORA) is a subset of rheumatoid arthritis defined as onset after the age of 60 years or over. EORA differs from younger-onset RA by a greater frequency of acute systemic onset with involvement of the shoulder, a more equal distribution between men and women, and increased disease activity (Schaardenburg, 1995).

Polymyalgia

Polymyalgia is a disorder that causes stiffening and aching in the hip, shoulder and neck region. It is not completely understood whether it is a disease of the joints, muscles or arteries. It is believed that inflammation in these sites leads to pain and stiffness. Since polymyalgia occurs mainly in people over 50 years of age, it is believed to be related to the aging process. In many cases, symptoms begin quite suddenly. People tend to feel worse in the morning, at times, making it difficult to get out of bed.

Treatment Options

Arthritis can be treated in numerous manners. The main goals of treatments are to reduce the symptoms; thus, increasing functional activity. Although medicine and surgical procedures are the contemporary choice of treatments, physical modalities are still utilized (Nicholas,1994). Compression gloves are used to decrease swelling, pain, and stiffness in the fingers. Other physical modalities include topical ointments, transcutaneous nerve stimulation and acupuncture. Treatments can be used in conjunction with one another to provide the most benefits. Exercise has become part of the protocol for managing arthritis, because it was found to improve work capacity and not cause further irritation (Glazier,

1996). Moreover, aquatic exercise has proven especially helpful in unloading limbs and promotes activity without pain.

Aquatics

The beneficial aspects of water can be dated back to Hippocrates (Hall et al, 1996). People have known for a very long time that water can be used to treat joint pains. Aquatics may be referred to as hydrotherapy, aquatic physical therapy, aquatic therapy or aquatic exercise to name a few. Aquatic physical therapy must be conducted by a licensed practitioner, the others do not (Cirullo, 1995). For the purposes of this paper, aquatic exercises are not referring to those run by a licensed practitioner.

Aquatic rehabilitation allows people to participate in physical activity that they would typically find stressful on land (Triggs, 1991). Water has many physiological effects which facilitates physical activity. The buoyancy in water aids in joint offioading (Becker, 1995). Venous return is increased. When the body is in a horizontal position, there is a decrease in cardiovascular load. Cool water between 6 and 80 degrees Fahrenheit increases body metabolism, thereby, allowing more calories to be burned (Weinstein, 1991).

The temperature of the water can be very important depending on the population. Cooler water is more suitable for healthy people who are conditioning or athletes who are training. Warm water is more appropriate for older populations or for people with arthritis.

Aquatic Exercise

An endless list of benefits exists to promote participation in an aquatic exercise program. Among the numerous physiological benefits, participants are improving overall state of mind. Through interactions with fellow participants, participants increase socialization skills (Garret, 1995). People with arthritis begin to feel more confident as their functional activity begins to increase. They are able to get a full workout, without causing further

damage to the affected joints. These psychological benefits are very important because many people with arthritis exhibit signs of depression.

Aquatic Exercise Programs

A typical exercise program incorporates the following workout components: warm-up, including gentle range of motion (ROM) exercises; stretching and strengthening; cardiovascular workout; and a cool down, emphasizing stretching to increase flexibility (Triggs,1991). Different programs will follow various protocols. It is recommended that classes be supervised by an Arthritis Foundation trained individual for people with arthritis. Treatment goals should be established. These goals should be based on participant's functional needs and interests.

Psychological Considerations

Aquatic programs have not only shown to improve physical functioning, but have also improved the psychological status of participants. This is an essential benefit because studies have shown that people with arthritis have an increased likelihood of depression. Arthritis not only causes pain and discomfort, it prevents the person from performing normal social activities. The increased socialization during class and the improvements in functional activities assist in combating depression.

Drawbacks

Once a person finds a pool that they can be used frequently, the drawbacks are few. Public pools may be used for lap swimming, or the pool may not be maintained at the appropriate temperature for therapeutic benefits. A facility with an appropriate program for a person's needs and fitness level may not always be available. Some people may not be able to swim, which may elicit fear. However, most of the aquatic exercises are done in a vertical position (Sova, 1993).

Other Studies

According to a study performed by Hall et al, the group of patients whom were assigned to the hydrotherapy group showed significantly greater improvements in joint tenderness and increased ROM in the knee (1996). Additionally, the hydrotherapy group maintained improvements in emotional and psychological state at a three month follow-up.

A study performed by Templeton et al, concluded that aquatic therapy increases functional ability, while decreasing pain (1996). All of the participants were diagnosed with rheumatic disease. The exercise sessions were conducted by an Arthritis Foundation certified aquatic instructor.

Hypothesis

Participants in aquatic exercise programs will report beneficial outcomes due to their participation in the program.

Methodology

This study involved two components. The first component consisted of interviewing aquatic instructors in a semi-structured interview. Secondly, a survey was distributed to aquatic program participants (see appendices A and B).

The 55 subjects, 12 males and 48 females, ranging in ages from 37 to 88, with a mean age of 66 years, who were participating in aquatic exercise programs at four different sites. The data was gathered through a questionnaire designed specifically for the purpose of this study. The surveys were distributed to the participants before or after their exercise session. The subjects completely the survey at the time of distribution, returning the completed questionnaire applied informed consent The researcher collected the questionnaire upon completion at the session.

Results

The following results have been divided into sections for clarity purposes. The first set of data is inclusive of all aquatic participants, both the arthritic and non-arthritic populations. Data pertaining to the arthritic and then the non-arthritic participants follow. Finally, information on the aquatic programs is presented.

Profile of All Aquatic Exercise Program Participants

Demographics

Several different aspects of the profiles of the 55 participants were examined. A majority (87.3%,48) of the participants were female. The subjects aged in ranges from 37 to 88 years of age, with a mean age of 66 years.

A significant number (74.5%, 41) of respondents reported having arthritis, one person was not sure (1.8%, 1) and thirteen respondents reported not having arthritis (23.6%, 13).

Exercise Habits

Approximately half (49.1%, 27) of the participants reported that they have participated in an aquatic exercise program for more than one year (see table 1). A significant number (72.7%, 40) of the respondents participated in aquatic exercise three to four times a week. A small percentage (7.3%, 4) reported exercising one to two times a week (see table 2).

Table 1

Duration of Participation of All Participants

	1-2 months	3-6 months	7-12 months	>1 year	Blank
Site 1	8.3% (1)	16.7% (2)	8.3% (1)	58.3% (7)	8.3% (1)
Site 2	22.2% (2)	11.1% (1)	22.2% (2)	44.4% (4)	0% (0)
Site 3	10% (2)	35% (7)	30% (6)	25% (5)	0% (0)
Site 4	14.3% (2)	0% (0)	7.1% (1)	78.6% (11)	0% (0)
Total	12.7% (7)	18.2% (10)	18.2% (10)	49.1% (27)	1.8% (1)

Note: 55 respondents, parentheses contain frequency counts

Table 2

Frequency of Weekly Participation of All Respondents

	1-2 times	3-4 times	5-6 times	Daily	Blank
Site 1	0% (0)	58.3% (7)	33.3% (4)	0% (0)	8.3% (1)
Site 2	11.1% (1)	77.8% (7)	11.1% (1)	0% (0)	0% (0)
Site 3	0% (0)	80% (16)	20% (4)	0% (0)	0% (0)
Site 4	21.4% (3)	71.4% (to)	7.1% (1)	0% (0)	0% (0)
Total	7.3% (4)	72.7% (40)	18.2% (to)	0% (0)	1.8% (1)

Note: 55 respondents, parentheses contain frequency counts

Perceived Benefits

Half (50.9%, 28) of the participants reported having much improvement, in relation to daily tasks. An additional 40%, reported to having some improvement. A majority (52.7%,29) reported, showing much improvement and slightly fewer people (45.5%, 25) reported as having some improvement in relation to occupational tasks. An equal (45.5%, 25) of participants reported as demonstrating much improvement or some improvement in decrease of pain and/or discomfort (see table 3).

Table 3

Perceived Benefits of All Participants

Category	Much Better	Somewhat Better	No Improvement	Blank
Extent aquatics has allowed you to perform better in terms of daily tasks	50.9% (28)	40% (22)	9.1% (5)	0% (0)
Extent aquatics has allowed you to function better in terms of occupational tasks.	52.7% (29)	40% (20)	7.3% (4)	3.6% (2)
Extent aquatics has helped in decreasing pain and/or discomfort	45.5% (25)	45.5% (25)	7.3% (4)	1.8% (1)

Note: 55 respondents, parentheses contain frequency counts

Profile of Arthritic Aquatic Exercise Program Participants

Demographics

There were a total of 41 participants, 36 females and 5 males, who reported as having arthritis. The subjects ranged in ages from 42 to 82 years of age, with a mean age of 65 years. Seventeen of the participants were not sure what type of arthritis they had. However, respondents did report as having osteoarthritis (39.1 %, 16), rheumatoid (12.2%,5), fibromyalgia (2.4%, 1) and two people reported as having another type, only one was specified as polymyalgia.

Exercise Habits

Over half (53.7%, 22) of the respondents, reported to exercising for over one year. An equal amount (14.6%, 6) reported exercising for one to two months and three to six months. Slightly more people (17.1 %,7), reported exercising for seven to twelve months (see table 4). An overwhelming majority (92.7%, 38) of people reported exercising at least three times a week (see table 5).

Table 4

Duration of Participation

	1-2 months	3-6 months	7-12 months	>1 year	Blank
Arthritic	14.6% (6)	14.6% (6)	17.1% (7)	53.7% (22)	0% (0)
Non-arthritic	7.1% (1)	28.6% (4)	21.4% (3)	35.7% (5)	7.1% (1)

Note: 41 respondents for arthritic, 14 respondents for non-arthritic, parentheses contain frequency counts

Table 5

Frequency of Weekly Participation

	1-2 times	3-4 times	5-6 times	Daily	Blank
Arthritic	7.3% (3)	70.7% (29)	22% (9)	0% (0)	0% (0)
Non-arthritic	7.1% (1)	78.6% (11)	7.1% (1)	0% (0)	7.1% (1)

Note: 41 respondents for arthritic, 14 respondents for non-arthritic, parentheses contain frequency counts.

Perceived Benefits

A majority (48.8%,20, 51.2% 21, respectively) of people reported to showing much improvement in relation to daily and occupational tasks. Some improvements in daily and occupational tasks was reported by 43.9% (18) and 39% (16) of respondents. However, more (48.8%, 20) people reported having some improvements in pain and/or discomfort than having much improvement (43.9%, 18) (see table 6).

Table 6

Perceived Benefits of Arthritic Participants

Category	Much Better	Somewhat Better	No Improvement	Blank
Extent aquatics has allowed you to perform better in terms of daily tasks.	48.8% (20)	43.9% (18)	7.3% (3)	0% (0)
Extent aquatics has allowed you to function better in terms of occupational tasks.	51.2% (21)	39% (16)	4.9% (2)	4.9% (2)
Extent aquatics has helped in decreasing pain and/or discomfort	43.9 (18	48.8% (20)	7.3% (3)	0% (0)

Note: 41 respondents, parentheses contain frequency counts.

Profile of Non-Arthritic Aquatic Exercise Program Participants

Demographics

There were a total of 14 respondents, 12 females and 2 males, who reported not having arthritis. The subjects ranged in ages from 37 to 88 years of age, with a mean age of 61 years.

Exercise Habits

Duration of participation in an aquatic exercise program did not vary greatly between those who have participated for three to six months (28.6%, 4) and those who have participated for over one year (35.7%,5). One person (7.1 %, 1) reported exercising for one to two months.

Perceived Benefits.

A majority (57.1%, 8) of the participants reported displaying much improvement in relation to function in terms of daily and occupational tasks, and half (50%, 8) reported a decrease in pain and/or discomfort. One participant (7.1%, 1) reported as having no improvements in the above categories (see table 7).

Table 7

Perceived Benefits of Non-Arthritic Participants

Category	Much Better	Somewhat Better	No Improvement	Blank
Extent aquatics has allowed you to perform better in terms of daily tasks.	57.1% (8)	28.6% (4)	14.3% (2)	0% (0)
Extent aquatics has allowed you to function better in terms of occupational tasks	57.1% (8)	28.6% (4)	14.3% (2)	0% (0)
Extent aquatics has helped in decreasing pain and/or discomfort	50% (7)	35.7% (5)	7.1% (1)	7.1% (1)

Note: 14 respondents, parentheses contain frequency counts

Profile of Aquatic Exercise Programs

The four aquatic program sites classified themselves as an aquatic exercise program available to members and the general public for a fee. An instructor from site one reported that the program was geared towards people who could participate in at intermediate activity level, with a typical class size of ten people. Site two geared their program towards the older population and people with joint problems with an average class size of 12 people. Sites three and four have their programs geared towards people with arthritis and joint problems with typical class sizes of 15 and 25, respectively.

Sites one and two did not have aquatic certified instructors, whereas, sites three and four did. Sites three and four emphasized flexibility in their programs, whereas, sites one

and two did not have or know guidelines established for their program. All four sites required a physical or waiver to participate in the aquatic program. Sites one, three and for maintained a constant pool temperature of 83 to 84 degrees Fahrenheit. On the other hand, the instructor from site two reported that the water was not maintained at a constant temperature.

Discussion

The results of this study have brought about a better understanding of aquatic program participants and their perceived benefits. The majority of the people participating in aquatic exercise programs are females. Many people also reported having arthritis.

The arthritic exercise program participants tended to have participated in an exercise program for a longer period of time and more frequently per week than non-arthritic participants. In fact, ten of the arthritic participants reported exercising for more than four years. Unfortunately, the population of the non-arthritic participants was small, only 14, compared to that of the arthritic population, 41 respondents.

When interpreting the perceived benefits, the participants need to be taken into account. Since more of the arthritic individuals have been participating longer and more frequently, it is logical that their perceived benefits would be higher than those who have not participated as long or as frequently. However, that is not the case. Slightly more of the non-arthritic participants reported feeling "much better" in terms of functioning better in terms of daily and occupational tasks and decrease in pain and/or discomfort.

According to other studies, the findings can be explained in two manners. A study conducted by Meyer and Hawley, found that people who are severely affected by rheumatic disease are underrepresented in community-based aquatic exercise programs (1994). Conceivably, the individuals who are participating are reporting improvements because they were higher functioning when they began the program. Secondly, a study, conducted by Hall et al. (1996), found that aquatic exercise produced the greatest improvements in

comparison to water immersion or exercise alone. Other studies, such as the one conducted by Templeton, et. al. (1996), have found that aquatic exercise has shown to be an effective treatment in improving the functional ability of people with rheumatic disease.

The non-arthritic group had two respondents that reported they exhibited no improvements in daily or occupational tasks. Interestingly, this number was equivalent with the number of people who had only participated in the program for one to two months and exercised one to two times per week and a no response for each. However, the arthritic group also had a small number of no improvements, even though twice as many people reported only to have been participating in an aquatic exercise program for one to two months.

The four aquatic exercise program sites all classified themselves as exercises programs available to the general public. Only two of the sites had certified aquatic instructors, although all of the instructors were certified in land aerobics. The same two sites maintained control of the water temperature. There appears to be no significant differences in reported perceived benefits. However, site four had less reports of "much better" improvements, even though the majority of the individuals participated in the program for over one year. The classes are reaching people with arthritis. However, instructors are allowed to choose class activities and not follow any established guidelines.

Suggestions for Future Research

The findings of this study are limited by several factors. The population of the respondents was limited and the representation of non-arthritic respondents was small in comparison to the arthritic population. A larger population would have been beneficial. This would include a higher representation of program sites.

To compile a more comprehensive profile of aquatic exercise participants, the questionnaire could be modified to account for retired individuals. It may also be useful to

know the goals of the respondents. Why did they join the aquatic exercise program? Were they participating in any land exercise programs?

Further investigations into program profiles may include observation of actual classes. They should also include an in-depth study of the type of exercises performed during the sessions.

Appendix A

Questionnaire

By answering and returning this questionnaire, informed consent is implied.

Directions: Please mark the appropriate response.

1. Age _____

2. Gender ___ Male ___ Female

3. Do you have arthritis? ___ Yes ___ No

4. What type of arthritis do you have?

___ Rheumatoid Arthritis _____ Osteoarthritis ___ Fibromyalgia

___ Not sure _____ Other (please specify)

5. How long have you been participating in an aquatic exercise program?

_____ 1 - 2 months _____ 3 - 6 months ___ 7 -12months ___ -> 1 year

6. How often do you participate in aquatic exercise on a weekly basis?

___ 1 - 2 times ___ 3 - 4 times ____ 5 - 6 times ___ daily

7. Would you exercise more often if a pool was accessible? _____ Yes ___ No

8. To what extent has aquatic exercise allowed you to function better in terms of daily tasks?

___ Much Better _____ Somewhat Better ___ No Improvement

9. To what extent has aquatic exercise allowed you to function better in terms of occupational tasks?

___ Much Better ___ Somewhat Better ___ No Improvement

10. To what extent has aquatic exercise helped in decreasing pain and! or discomfort?

___ Much Better ___ Somewhat Better ___ No Improvement

11. Name of Facility _____

Please feel free to add any additional comments on the back of this sheet or elaborate on any of your answers.

Thank You for participating in this questionnaire.

Site One (All Participants)

1. Age mean: 67 years

2. Gender 0% (0) Male 100% (12) Female

3. Do you have arthritis? 66.7% (8) Yes 33.3% (4) No

4. What type of arthritis do you have?

   0% (0) Rheumatoid Arthritis 25% (3) Osteoarthritis 0% Fibromyalgia

   42% (5) Not sure 0% Other (please specify) 33.3% (4) Blank

5. How long have you been participating in an aquatic exercise program?

   8.3% (1) 1 - 2 months 16.7% (2) 3 - 6 months 8.3% (1) 7 - 12 months

   58.3% (7) > 1 year 8.3% (1) Blank

6. How often do you participate in aquatic exercise on a weekly basis?

   0% (0) 1 - 2 times 58.3% (7) 3 - 4 times 33.3% (4) 5 - 6 times

   0% daily 8.3% (1) Blank

7. Would you exercise more often if a pool was accessible?

   50% (6) Yes 25% (3) No 25% (3) Blank

8. To what extent has aquatic exercise allowed you to function better in terms of daily tasks?

   66.7% (8) Much Better 25% (3) Somewhat Better

   8.3% (1) No Improvement 0% (0) Blank

9. To what extent has aquatic exercise allowed you to function better in terms of occupational tasks?

   58.3% (7) Much Better 25% (4) Somewhat Better

   8.3% (1) No Improvement 0% (0) Blank

10. To what extent has aquatic exercise helped in decreasing pain and! or discomfort?

    41.7% (5) Much Better 41.7% (5) Somewhat Better

    8.3% (1) No Improvement 8.3% (1) Blank

Site Two (All Participants)

1. Age mean: 57 years

2. Gender 11.1%(1) Male 88.9% (8) Female

3. Do you have arthritis? 66.7% (6) Yes 22.2% (2) No 11.1% (1) Blank

4. What type of arthritis do you have?

22.2% (2) Rheumatoid Arthritis 22.2% (2) Osteoarthritis 0% Fibromyalgia

33.3% (3) Not sure 0% Other (please specify) 22.2% (2) Blank

5. How long have you been participating in an aquatic exercise program?

22.2% (2) 1 - 2 months 11.1% (1) 3 - 6 months 22.2% (2) 7 - 12 months

44.4% (4) > 1 year

6. How often do you participate in aquatic exercise on a weekly basis?

11.1% (1) 1 - 2 times 77.8% (7) 3 - 4 times 11.1%(1) 5 - 6 times

0% daily 0% Blank

7. Would you exercise more often if a pool was accessible?

33.3% (3) Yes 44.4% (4) No 22.2% (2) Blank

8. To what extent has aquatic exercise allowed you to function better in terms of daily tasks?

55.5% (5) Much Better 33.3% (3) Somewhat Better 11.1% (1) No Improvement

9. To what extent has aquatic exercise allowed you to function better in terms of occupational tasks?

44.4% (4) Much Better 44.4% (4) Somewhat Better 11.1% (1) No Improvement

10. To what extent has aquatic exercise helped in decreasing pain and! or discomfort?

55.5% (5) Much Better 44.4% (4) Somewhat Better 0% (0) No Improvement

Site Three (All Participants)

1. Age mean: 69 years

2. Gender 5% (1) Male 95% (19) Female

3. Do you have arthritis? 65% (13) Yes 35% (7) No

4. What type of arthritis do you have?

0% (0) Rheumatoid Arthritis 25% (5) Osteoarthritis 0% (0) Fibromyalgia

35% (7) Not sure 5% (1) Other (please specify) 35% (7) Blank

5. How long have you been participating in an aquatic exercise program?

10% (2) 1 - 2 months 35% (7) 3 - 6 months 30% (6) 7 - 12 months

25% (5) > 1 year

6. How often do you participate in aquatic exercise on a weekly basis?

0% (0) 1 - 2 times 80% (16) 3 - 4 times 20% (4) 5 - 6 times

0% (0) daily 0% CO) Blank

7. Would you exercise more often if a pool was accessible?

70% (14) Yes 30% (6) No

8. To what extent has aquatic exercise allowed you to function better in terms of daily tasks?

65% (13) Much Better 30% (6) Somewhat Better 5% (1) No Improvement

9. To what extent has aquatic exercise allowed you to function better in terms of occupational tasks?

65% (13) Much Better 30% (6) Somewhat Better 5% (1) No Improvement

10. To what extent has aquatic exercise helped in decreasing pain and! or discomfort?

65% (13) Much Better 30% (6) Somewhat Better 5% (1) No Improvement

Site Four (All Participants)

1, Age mean: 70 years

2. Gender 35.7 % (5) Male 64.3% (9) Female

3. Do you have arthritis? 100 % (14) Yes 0% (0) No

4. What type of arthritis do you have?

21.4% (3) Rheumatoid Arthritis 42.3% (6) Osteoarthritis 7.1% (1) Fibromyalgia

21.4% (3) Not sure 7.1%(1) Other (please specify) (poly) 0% Blank

5. How long have you been participating in an aquatic exercise program?

14.3% (2) 1 - 2 months 0% (0) 3 - 6 months 7.1%(1) 7 - 12 months

78.6% (11) > 1 year

6. How often do you participate in aquatic exercise on a weekly basis?

21.4% (3) 1 - 2 times 71.4% (10) 3 - 4 times 7.1%(1) 5 - 6 times

0% daily 0 % Blank

7. Would you exercise more often if a pool was accessible?

21.4% (3) Yes 64.3% (9) No 14.3% (2) Blank

8. To what extent has aquatic exercise allowed you to function better in terms of daily tasks?

14.3% (2) Much Better 71.4% (10) Somewhat Better 14.3% (2) No Improvement

9. To what extent has aquatic exercise allowed you to function better in terms of occupational tasks?

35.7% (5) Much Better 42.9% (6) Somewhat Better 7.1%(1) No Improvement

14.3% (2) Blank

10. To what extent has aquatic exercise helped in decreasing pain and! or discomfort?

14.3% (2) Much Better 71.4% (10) Somewhat Better 14.3% (2) No Improvement

Site Totals (All **Participants)**

1. Age mean: 66 years

2. Gender 12.7 % (7) Male 87.3% (48) Female

3. Do you have arthritis? 74.5 % (41) Yes 23.6% (13) No 1.8% (1) Blank

4. What type of arthritis do you have?

9.1% (5) Rheumatoid Arthritis 29.1% (16) Osteoarthritis 1.8% (1) Fibromyalgia

32.7% (18) Not sure 3.6% (2) Other (please specify) (1 Poly) 23.6% (13) Blank

5. How long have you been participating in an aquatic exercise program?

12.7% (7) 1 - 2 months 18.2% (10) 3 - 6 months 18.2%(10) 7 - 12 months

49.1% (27) > 1 year 1.8% (1) Blank

6. How often do you participate in aquatic exercise on a weekly basis?

7.3% (4) 1 - 2 times 72.7% (40) 3 - 4 times 18.2% (10) 5 - 6 times

0% daily 1.8 % (1) Blank

7. Would you exercise more often if a pool was accessible?

47.3% (26) Yes 40% (22) No 12.7% (7) Blank

8. To what extent has aquatic exercise allowed you to function better in terms of daily tasks?

50.9% (28) Much Better 40% (22) Somewhat Better 9.1%(5) No Improvement

9. To what extent has aquatic exercise allowed you to function better in terms of occupational tasks?

52.7% (29) Much Better 40% (20) Somewhat Better 7.3% (4) No Improvement

3.6% (2) Blank

10. To what extent has aquatic exercise helped in decreasing pain and! or discomfort?

45.5% (25) Much Better 45.5% (25) Somewhat Better 7.3% (4) No Improvement

1.8% (1) Blank

Site Totals (Arthritic Participants)

1. Age mean: 65 years

2. Gender 12.2 % (5) Male 87.8% (36) Female

3. Do you have arthritis? 100 % (41) Yes 0% (0) No

4. What type of arthritis do you have?

12.2% (5) Rheumatoid Arthritis 39.1% (16) Osteoarthritis 2.4% (1) Fibromyalgia

41.5% (18) Not sure 4.9% (2) Other (please specify) (1 Poly)

5. How long have you been participating in an aquatic exercise program?

14.6% (6) 1 - 2 months 14.6% (6) 3 - 6 months 17.1%(7) 7 - 12 months

53.7% (22) > 1 year

6. How often do you participate in aquatic exercise on a weekly basis?

7.3% (3) 1 - 2 times 70.7% (29) 3 - 4 times 22% (10) 5 - 6 times

0% daily

7. Would you exercise more often if a pool was accessible?

43.9% (18) Yes 43.9% (18) No 12.2% (5) Blank

8. To what extent has aquatic exercise allowed you to function better in terms of daily tasks?

48.8% (20) Much Better 43.9% (18) Somewhat Better 7.3% (3) No Improvement

9. To what extent has aquatic exercise allowed you to function better in terms of occupational tasks?

51.2% (21) Much Better 39% (16) Somewhat Better 4.9% (2) No Improvement

4.9% (2) Blank

10. To what extent has aquatic exercise helped in decreasing pain and! or discomfort?

43.9% (18) Much Better 48.8% (20) Somewhat Better 7.3% (3) No Improvement

Site Totals (Non-arthritic Participants)

1. Age mean: 61 years

2. Gender 14.3 % (2) Male 85.7% (12) Female

3. Do you have arthritis? 0 % (0) Yes 92.9% (13) No 7.1% (1) Blank

4. What type of arthritis do you have?

0% (0) Rheumatoid Arthritis 0% (0) Osteoarthritis 0% (0) Fibromyalgia

0% (0) Not sure 0% (0) Other (please specify) 0% (0) Blank

5. How long have you been participating in an aquatic exercise program?

7.1% (1) 1 - 2 months 28.6% (4) 3 - 6 months 21.4%(3) 7 - 12 months

35.7% (5) > 1 year 7.1% (1) Blank

6. How often do you participate in aquatic exercise on a weekly basis?

7.1 % (1) 1 - 2 times 78.6% (11) 3 - 4 times 7.1%(1) 5 - 6 times

0% daily 7.1% (1) Blank

7. Would you exercise more often if a pool was accessible?

57.1% (8) Yes 28.6% (4) No 14.3% (2) Blank

8. To what extent has aquatic exercise allowed you to function better in terms of daily tasks?

57.1% (8) Much Better 28.6% (4) Somewhat Better 14.3% (2) No Improvement

9. To what extent has aquatic exercise allowed you to function better in terms of occupational tasks?

57.1% (8) Much Better 28.6% (4) Somewhat Better 14.3% (2) No Improvement

10. To what extent has aquatic exercise helped in decreasing pain and! or discomfort?

50% (7) Much Better 35.7% (5) SomewhatBetter 7.1% (1) NoImprovement

7.1% (1) Blank

Appendix B

Questions for Facility (Interview)

By answering the following questions, informed consent is implied.

1. Name of Facility _____
2. Type of aquatic program i.e. therapeutic or exercise
3. Which population is aquatic program geared towards?
4. Are the aquatic instructors certified?
5. If so, by whom?
6. Which standards or guidelines does your program follow?
7. Is the temperature of the water maintained at a set level?
8. What is a typical class size?
9. Are participants required to have physical or complete a waiver?

Responses From Facility (Interview)

Site One

1. Name of Facility _____

2. Type of aquatic program:

   exercise

3. Which population is aquatic program geared towards?

   intermediate activity level

4. Are the aquatic instructors certified?

   No, should be by October, 1997.

5. If so, by whom?

   Not applicable.

6. Which standards or guidelines does your program follow?

   Unstructured program.

7. Is the temperature of the water maintained at a set level?

   Approximately 84 degrees Fahrenheit..

8. What is a typical class size?

   10

9. Are participants required to have physical or complete a waiver?

   They fill out a PAR-Q. If any problems arise, they need a doctor's release.

Responses From Facility (Interview)

Site Two

1. Name of Facility _____

2. Type of aquatic program:

   exercise

3. Which population is aquatic program geared towards?

   Older population, people with joint problems

4. Are the aquatic instructors certified?

   No

5. If so, by whom?

   Not applicable.

6. Which standards or guidelines does your program follow?

   Don't know, we haven't been told.

7. Is the temperature of the water maintained at a set level?

   The temperature of the water is constantly changing.

8. What is a typical class size?

   12

9. Are participants required to have physical or complete a waiver?

   If they are over 40 years of age, they need a physical.

Responses From Facility (Interview)

Site Three

1. Name of Facility _____

2. Type of aquatic program:

   exercise

3. Which population is aquatic program geared towards?

   People with arthritis.

4. Are the aquatic instructors certified?

   Yes.

5. If so, by whom?

   Aquatic Exercise Association

6. Which standards or guidelines does your program follow?

   Emphasis is placed on flexibility.

7. Is the temperature of the water maintained at a set level?

   Approximately 84 degrees Fahrenheit..

8. What is a typical class size?

   15

9. Are participants required to have physical or complete a waiver?

   Physical exams.

Questions for Facility (Interview)

Site Four

1. Name of Facility _____

2. Type of aquatic program:

exercise

3. Which population is aquatic program geared towards?

People with joint difficulty and arthritis.

4. Are the aquatic instructors certified?

Yes.

5. If so, by whom?

Aquatic Exercise Association

6. Which standards or guidelines does your program follow?

Emphasis is placed on flexibility.

7. Is the temperature of the water maintained at a set level?

Approximately 83 degrees Fahrenheit.. The temperature is taken three times a day.

8. What is a typical class size?

25

9. Are participants required to have physical or complete a waiver?

Physical exams.

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