

## **Relation between Scuba Diving and the happiness among paraplegia Persons**

**\*Dr/ Khaled M. Abdelkarem**

### **Abstract:**

Diving is an ideal sport for almost all people with physical disabilities, and therefore, has been increasingly popular as a way of rehabilitation for such people. The study was conducted on a sample of 10 male participants. **The aim:** To assess the psychosocial status of the applied sample, one psychological scale The Oxford Happiness Questionnaire was developed by psychologists Michael Argyle and Peter Hills at Oxford University and five water training and Swim evaluation. were implemented before and after the diving training. Data analysis was performed using spss program statistics. **Results:** After the three-week diving program, results show that the distribution of data has changed and is in favor of the post measurement in the physical testes during scuba diving skills Confined Water Swimming Skills, Confined Water Skin Diving /Snorkeling Skills, Confined Water SCUBA Diving Skills, Open Water SCUBA Diving Skills .and in the 29 question's in Pre and Post the Oxford Happiness Questionnaire Paraplegia Divers **Conclusion:** The study showed that after a three-week programmed diving training, the quality of life of people with disabilities has improved and they adopted elements of diving techniques. This shows that people with disabilities are as well qualified for recreational diving when accompanied by a diving instructor, which again suggests that disability in and under water does not represent a barrier for recreational underwater activities.

**Keywords:** Scuba diver, happiness, paraplegia.

### **Introduction**

Water-based recreational activities are regarded as exciting leisure pursuits (16), which make participants actively involved (26). Among those activities, diving is rather challenging engagement, which

imposes specific barriers to entry (32). Various types of disabilities may limit people from performing functions that other people can. However, when it comes to scuba diving, the tables can quickly turn. The

---

\* Faculty of Sport and physical Education. Asyut Uni, Egypt.

nature of being underwater is a feeling like no other, and it requires skills that are not tied to a person's physical abilities. This is why learning to scuba dive is becoming a popular option for people with disabilities, as well as those who are experiencing some form of PTSD and seeking treatment options. Swimming is an experience like no other. It is an excellent form of physical exercise for the body, and it keeps all persons in shape. When coupled with scuba diving, people with disabilities can reap many different benefits. Because of pressure at greater depths, more nitrogen is dissolved into blood and body tissues. An effect of that process is a large increase in serotonin production in the brain and spinal cord tissues. Serotonin, a neurotransmitter found in the central nervous system, regulates mood and sleep, and contributes to cognitive function. Scuba diving is a sport that offers everyone a window to the underwater world, even people faced with physical barriers. The water which has always been used in physical therapy and recovery treatments, is a wonderful medium for those with

disabilities to discover not only a whole new world but some freedom of movement in the water. Diving is a form of qualified tourism, extremely attractive, however also very dangerous due to being in an environment other than land, it integrates disabled people and frequently constitutes an occasion for compensation, or even overcompensation their disability. underlines the impact of diving on the well-being and an increase of authority of disabled people as well as facilitating acceptance disabilities. (29). Historically, scuba diving was an activity typically associated with young and fit, militarily trained individuals. However, in recent years, the activity has become widely popular as an adventure sport carried out by many people around the world (27). As the popularity of scuba diving as a leisure activity grew, so the interest arose in introducing the activity to people with disabilities, and in the late 1970s to the late 1980s a number of projects were set up to train disabled people as divers (15). These projects examined medical and safety considerations but paid little attention to the psychological and sociological factors that

might affect a diver with physical impairments. To date, there appear to be no publications devoted solely to the examination of psychosocial aspects of diving for people with physical impairments. Inefficient lower limbs in people after amputations or with paraparesis there is a problem with propulsion. They do not use the fundamental and effective manner of movement under water using fins. Their propulsion source is their hands. And here another difficulty occurs: because they are using their hands to move under water, the possibility to hold various pieces of equipment such as a torch, an apparatus, a camera and other objects, is limited. This problem is solved by the use of e.g. head torches or torches mounted on the diving equipment on the hose of the II-degree regulator, on the diving mask, on a special helmet) as well as suspended bags, etc. People moving under water using only their hands, without fins on their feet, use more energy, especially when they cover longer distances quickly or swim against the current, which means that they use more breathing gas from

the diving apparatus, and therefore they have less diving time.(29).While diving is possible with a variety of disabilities including paraplegics, quadriplegic, amputees, people with muscular dystrophy, people who are mentally challenged are the only exceptions. There is even the possibility of diving for many other people challenged with Cerebral Palsy, Downs Syndrome, Multiple Sclerosis, and hearing and visually impaired depending on their condition. introducing the activity to people with disabilities, and in the late 1970s to the late 1980s a few projects were set up to train disabled people as divers (15). These projects examined medical and safety considerations but paid little attention to the psychological and sociological factors that might affect a diver with physical impairments. (9). IAHD (International Association for Handicapped Divers): The IAHD provides a training program, which is recognized by the major SCUBA organizations such as PADI, NAUI and SSI. In addition, it has programs which train diving instructors to work with disabled people to try and

counter previous skepticism encountered by pioneers in disabled diving. (4) pioneered the introduction of sports as part of the therapeutic program in the rehabilitation of spinal injured clients (17). Since then, interest in sport activities for people with physical and mental impairments has grown dramatically, as many authors consider exercise and sport participation to be beneficial to one's physical and mental health, social functioning and overall quality of life (8, 4). Through movement problems and the inability to exercise better, especially for the disabled. Training in zero gravity, especially underwater, and using diving equipment may benefit the physical and psychological state, especially the level of happiness of the practitioner.

**Aims:** Our aim was to assess the effects of Scuba Diving Exercises training on wellbeing for paraplegia handicapped persons

### **Material and Methods**

#### **Subjects**

10 healthy paraplegia handicapped persons (Male-random) volunteered for the study in September 2019. The subjects have no dive experience record in HSA

SCUBA diving program and during the investigation period all subjects trained on HSA training for 4 weeks in Max 4 m depth.

#### **Protocol**

Participants were paraplegia handicapped persons male. All participants had no previous scuba diving experience. All participants were treated in accordance with the Ethical Principles of Psychologists and Code of Conduct (2). They were briefed on the nature of the diving tasks, and of their right to discontinue involvement at any point, as part of the standard IHAD procedures.

**Measures** In order to assess the psychosocial status of the applied sample, one psychological scale The Oxford Happiness Questionnaire was developed by psychologists Michael Argyle and Peter Hills at Oxford University and five water training and Swim evaluation. were implemented before and after the diving training. Instructions there are a few statements about happiness Annex 1.

**Treatments** Prior to their dive, all participants received the IHAD kills of instruction which involved weekly attendance over a 3-week

period. The purposes of the Scuba diving for paraplegia training program were to teach participants to enhance Happiness through anti-gravity and underwater training, and to improve performance.

**Procedure** Each group was trained separately following standard IHAD program. All group received their IHAD training at the same location from the same instructors. IHAD Skills was measured during the first Lesson of their training approximately three weeks prior to the dive. All participants completed the

IHAD program. Both tasks took place at a depth of 4m and Open water were administered in accordance with standard procedures (20). **Data analysis** A control value for each parameter was calculated as an average value mean and standard deviation  $M \pm SD$  from each Subject. The improvement of psychological variables values of Happiness test was compared between, before and after, Paraplegia training program, using paired t-test. The level used for accepting significance was  $*P < 0.05$ .

**Table (1)**  
**Characteristics of 20 subjects**

Characteristics	Means $\pm$ SD
Age [ year]	27.9 $\pm$ 1.1
Height [cm]	172 $\pm$ 1.08
Weight [kg]	83.85 $\pm$ 1.32
Training Experience [ TE] Num	0 $\pm$ 0

Data are means  $\pm$  SD, n=20

**Results:**

**Table (2)**  
**Pre and Post Confined and Open Water Skills for Paraplegia Divers (N=10).**

Characteristics	Practice Test		T-test	Percent rank %
	Pre Mean $\pm$ SD	Post Mean $\pm$ SD		
<b>CONFINED WATER SWIMMING SKILLS</b>				
1-Swim 220 yards/200 meters	2 $\pm$ 0.66	4.11 $\pm$ 0.73	0.00031	51
2-Survival swim for ten (10) minutes	1.44 $\pm$ 0.49	3.33 $\pm$ 0.47	0.00014	56.7
3-Swim underwater for 50 feet/15 meters or 30 seconds	3.44 $\pm$ 0.49	3.55 $\pm$ 0.49	0.34	3.03
<b>CONFINED WATER SKIN DIVING /SNORKELING SKILLS</b>				
4-Rest motionless at the surface, for at least five (5) minutes	1.66 $\pm$ 0.47	4.11 $\pm$ 0.56	3.96	59.6

**Follow Table (2)**  
**Pre and Post Confined and Open Water Skills for Paraplegia**  
**Divers (N=10).**

Characteristics	Practice Test		T-test	Percent rank%
	Pre Mean $\pm$ SD	Post Mean $\pm$ SD		
5-Surface dive headfirst and/or feet first to a depth of eight (8) feet/2.5 meters or more	2.11 $\pm$ 0.73	3.66 $\pm$ 0.47	0.001	42.3
6-Swim 50 feet/15 meters, or 30 seconds	2.44 $\pm$ 0.49	4.22 $\pm$ 0.41	1.01	42.1
<b>CONFINED WATER SCUBA DIVING SKILLS</b>				
7-Swim underwater without a dive mask on and without blocking the nostrils for at least 150 feet/45meters	3.44 $\pm$ 0.49	4.55 $\pm$ 0.49	0.0013	24.3
8-(CESA) at a rate of 30 feet/9m per minute	1.77 $\pm$ 0.41	3.66 $\pm$ 0.47	4.41	51.6
9-Ascending: Alternate Air Source Use: Octopus Back-Up Regulator: a controlled emergency swimming ascent, 30 feet/9meters per minute	4 $\pm$ 0	5 $\pm$ 0		20
10-Tow at the surface another fully equipped SCUBA diver a distance of at least 150 feet/45 meters	3.33 $\pm$ 0.47	4.55 $\pm$ 0.49	1.65	26.8
11-open water performance requirements Surface dive headfirst and/or feet first to a depth of at least ten (10) feet/3meters	3.55 $\pm$ 0.49	4.77 $\pm$ 0.41	0.0002	25.5
12-Rest motionless at the surface for at least five (5) minutes	3.33 $\pm$ 0.47	4.44 $\pm$ 0.49	0.00027	25
<b>OPEN WATER SCUBA DIVING SKILLS</b>				
13-Using buoyancy control, descend comfortably to a depth of 20 feet/6meters to 30 feet/9meters	1.55 $\pm$ 0.49	3.55 $\pm$ 0.49	6.05	56.3
14-Breathing comfortably from a free-flowing regulator second stage while at a depth of 20 feet/6meters to 30 feet/9meters for a period of at least one (1) minute	4 $\pm$ 0	5 $\pm$ 0	4.24	20
15-replace and clear dive mask of water. Perform this skill in 20 ft/6meters to 30 ft/9meters of water	2.44 $\pm$ 0.49	4.66 $\pm$ 0.47	0.00016	47.6
16-alternate air source use: at least one (1) minute as the donor and one (1) minute as the receiver of air, while at a depth of 20 ft/6meters to 30 feet/9meters	2.33 $\pm$ 0.66	3.77 $\pm$ 0.41	0.00016	38.19
17-controlled emergency swimming ascent: at a rate of 30 feet/9 meters per minute	2.22 $\pm$ 0.41	3.66 $\pm$ 0.47	0.00023	39.34
18-ascending alternate air source use, 30 feet/9meters per minute, from a depth of 20 feet/6meters to 30 feet/9meters	2.33 $\pm$ 0.47	3.66 $\pm$ 0.47	0.00137	39.34
19-Safely ascend to the surface of 30 feet/9meters per minute, from a depth of 20 feet/6meters to 30 feet/9 meters.	2.55 $\pm$ 0.49	3.66 $\pm$ 0.47	0.00137	30.3
20-Tow Scuba diver a distance of at least 150 feet/45meters	3.22 $\pm$ 0.62	4.33 $\pm$ 0.47	0.00137	25.63
21-Swim on the surface 100 yards/90meters	2.55 $\pm$ 0.49	4.33 $\pm$ 0.47	1.01	41.1
22-MID-WATER BUDDY BREATHING: in at least 15 feet/5 meters of water	1.33 $\pm$ 0.47	3.22 $\pm$ 0.41	6.57	58.6

Data are means  $\pm$  SD, n=20 \*p<0.05

**Table (3)**  
**Pre and Post the Oxford Happiness Questionnaire Paraplegia**  
**Divers (N=10).**

Oxford Happiness Questionnaire	Practice Test		T-test	Percent rank%
	Pre Mean ± SD	Post Mean ± SD		
1. I don't feel particularly pleased with the way I am. (R)	3 ± 0.77	4.55 ± 0.47	0.0003	34
2. I am intensely interested in other people.	2.44 ± 0.78	4 ± 0.63	0.0016	39
3. I feel that life is very rewarding.	3.11 ± 0.69	4.55 ± 0.47	0.0013	31
4. I have very warm feelings towards almost everyone.	3.66 ± 0.44	4.22 ± 0.59	0.006	13.6
5. I rarely wake up feeling rested. (R)	2.44 ± 0.64	4.22 ± 0.59	0.0001	13.2
6. I am not particularly optimistic about the future. (R)	3.11 ± 0.69	3 ± 0.63	0.391	0
7. I find most things amusing.	3.11 ± 0.53	3.88 ± 0.69	0.011	19.8
8. I am always committed and involved.	2.66 ± 0.77	4.22 ± 0.59	0.0001	37
9. Life is good.	3.33 ± 0.63	4.33 ± 0.44	0.0001	23
10. I do not think that the world is a good place. (R)	3.22 ± 0.74	4.11 ± 0.53	0.0103	20.5
11. I laugh a lot.	3.33 ± 0.89	4.44 ± 0.47	0.003	26.3
12. I am well satisfied about everything in my life.	3.22 ± 0.97	4.22 ± 0.59	0.013	23.6
13. I don't think I look attractive. (R)	2.77 ± 0.59	3 ± 0.63	0.223	7.6
14. There is a gap between what I would like to do and what I have done. (R)	4.55 ± 1.10	2.88 ± 0.53	0.001	60
15. I am very happy.	3.66 ± 0.44	4.11 ± 0.53	0.084	12.4
16. I find beauty in some things.	4.11 ± 0.94	4.55 ± 0.64	0.112	2.2
17. I always have a cheerful effect on others.	3.33 ± 0.63	3.66 ± 0.77	0.173	9
18. I can fit in (find time for) everything I want to.	3.77 ± 0.59	4.33 ± 0.44	0.047	13
19. I feel that I am not especially in control of my life. (R)	3 ± 0.63	2.88 ± 0.82	0.379	10
20. I feel able to take anything on.	4.33 ± 0.44	4.66 ± 0.44	0.040	7
21. I feel fully mentally alert.	4.33 ± 0.63	4.55 ± 0.47	0.173	5

**Follow Table (3)**  
**Pre and Post the Oxford Happiness Questionnaire Paraplegia**  
**Divers (N=10).**

Oxford Happiness Questionnaire	Practice Test		T-test	Percent rank%
	Pre Mean ± SD	Post Mean ± SD		
22. I often experience joy and elation.	3.77 ± 0.59	4.44 ± 0.47	0.040	15
23. I don't find it easy to make decisions. (R)	3.44 ± 0.78	2.55 ± 0.47	0.010	36
24. I don't have a particular sense of meaning and purpose in my life. (R)	3.22 ± 0.74	3 ± 0.63	0.084	13
25. I feel I have a great deal of energy.	3.55 ± 0.64	4.44 ± 0.64	0.017	21.3
26. I usually have a good influence on events.	3.11 ± 0.69	4.44 ± 0.64	0.008	29
27. I don't have fun with other people. (R)	3 ± 0.44	2.22 ± 0.59	0.004	40
28. I don't feel particularly healthy. (R)	3.44 ± 0.64	2.88 ± 0.53	0.047	21.4
29. I don't have particularly happy memories of the past. (R)	3.11 ± 1.04	3 ± 0.77	0.42	3.3

### Discussion

We are bringing the sport of scuba diving to persons with limited abilities! Adaptive scuba diving is a method of training persons with a variety of disabilities to participate in scuba diving as independently as their abilities allow them to do. The students are trained with the same academic information and consistency as able-bodied divers where the only difference is that students are assessed according to their ability to complete a specific skill-set on the surface and of course, underwater, More flexibility, increased

movement, and improved sensation Disabled persons are often able to move more freely under water than they would on land. They get a feeling of flexibility and freedom that they would rarely get anywhere else. This often relates to being able to use muscles that are often restricted by the force of gravity. Additionally, people often report improved sensation in areas where their disability has left no or little sensation. Many Benefits Scuba Diving Provides for Those with Disabilities to enable people with disabilities to enjoy the same level of



quality (dive) training programs, certifications, and diving adventures as people with no disability. (20),(6) found that leisure-time physical activity (LTPA) has a significant impact on subjective well-being. Adaptive Scuba provides freedom in the different environment. When scuba diving, disabled persons can enjoy a unique experience that they otherwise would not get while on land. The feeling of being immersed underwater, swimming independently, and enjoying the freedom of a new environment is often therapeutic. It is regularly used as a form of physical therapy for wounded veterans and others with a disability seeking to improve functionality of specific body parts. We found significant differences in Oxford Happiness Questionnaire, for the post practice test variable. Being happy has more benefits than just feeling good. When scuba diving, they also enjoy the view of underwater creatures such as shoals of fish and up close and person experiences with the cool critters at the Denver Downtown Aquarium. Anxiety relief Scuba diving is increasing in popularity as a

form of anxiety relief and treatment for disorders such as PTSD. For many years, the traditional treatment methods that include drugs and exposure therapy have proven to be unpopular among veterans. As a result, alternative treatment methods, such as scuba diving, are being increasingly sought after. Scuba diving is one of the top options for veterans because it allows them to focus on something new, different, and exciting. It relieves the anxiety that they associate with their previous experiences and they can redirect their energy to new focuses. In addition, just like in the military, they get to buddy up with someone they know and trust. a sense of control with scuba diving, disabled persons feel more in control of their bodies and abilities than when they're on land. Through the experience, they feel like they can do what any other able-bodied person can do. This is important in boosting self-confidence and a sense of self-belief. Happiness is an emotional state when the individual perceives the need is fulfilled and the ideal is realized. It is a subjective response to people's real life, which is closely related to the

real conditions of people's life and reflects people's needs and values (19). Many sports federations aim is to use adaptive sports and adventure activities as a platform to enrich, encourage, motivate and build confidence and self-belief for people with disabilities. That securing adaptive sporting equipment will allow people with disabilities the opportunity to experience freedom, the environment, independence, adrenalin and the satisfaction that sport and adventure activities has to offer (24). In order to prevent such problems, bottles for diving apparatus with larger capacities or greater pressure of the breathing gas are used. Also, special underwater scooters are used or even wheelchairs with an engine and controls. Some of the social and psychological difficulties that disabled people may encounter are related to issues such as negative self-perception, body image and social dysfunction. suggested that the experience of recreational sport participation leads to improved body image and perception of physical competence. By highlighting ability rather than impairment, through taking part in sporting

activities, participants were able to recognize their strengths and enhance their belief in their physical potential (9),(24). They reported that the divers showed a significant improvement of self-concept, particularly of body image. Some of these points are echoed in a personal account of a disabled diver published in a journal of wheelchair sports. (18),(24),(28),(24). refers to a diver describing the feeling of equality derived from being able to abandon the wheelchair and take part in the activity like any non-disabled person does, in addition to feeling elated by the mastery of a challenge he never thought he could achieve (9),(30),(28). The goal of this focused review is to improve the learner's knowledge of the positive impact that active lifestyles can have on overall health in the disabled youth population and, as a result, modify their practice by incorporating recreational and competitive sport activities as part of improving overall patient care.(30),(18),(10),(21). proposed the Oxford Happiness Inventory composed of seven constructs: positive cognition, social commitment, positive effect, sense of control,

physical fitness, self-satisfaction, and mental alertness (12), (13), (2). announced the Indices of General Affect and Well-being consisting of two constructs: overall emotion and life satisfaction. (14) proposed the General Well-being Schedule that incorporates six adjustment factors: (1) freedom from health concerns, worry, and distress, (2) energy level, (3) satisfying and exciting life, (4) cheerful versus depressed mood, (5) relaxed versus tense and anxious, and (6) emotional behavioral control. (5) published the Affect Balance Scales, which includes the scales for assessing positive emotion, negative emotion, and balance emotion. (11), (3). used the European quality of life survey (EQLS) and divided happiness into seven dimensions, including health, safety, friendship, respect, leisure, personality, and harmony with nature. (23) divided pleasure into several cognitive (such as family life, recreation, income, work, health satisfaction) and emotional (such as happiness, anger, anxiety, sadness) components, and analyzed the relationship between commuting and subjective happiness. (21),

(10). Inefficient lower limbs: In people after amputations or with paraparesis there is a problem with propulsion. They do not use the fundamental and effective manner of movement under water using fins. Their propulsion source is their hands. And here another difficulty occurs: because they are using their hands to move under water, the possibility to hold various pieces of equipment such as a torch, an apparatus, a camera and other objects, is limited. This problem is solved by the use of e.g. head torches or torches mounted on the diving equipment (on the hose of the II-degree regulator, on the diving mask, on a special helmet) as well as suspended bags, etc. People moving under water using only their hands, without fins on their feet, use more energy, especially when they cover longer distances quickly or swim against the current, which means that they use more breathing gas from the diving apparatus, and therefore they have less diving time. In order to prevent such problems, bottles for diving apparatus with larger capacities or greater pressure of the breathing gas are used. Also, special underwater scooters are

used or even wheelchairs with an engine and controls (22), (19), (1), (7), (22).

### Recommendations

practice and training Scuba diving sport because it is among the sports of Anti-gravity sport because of its benefits on the body and psychological variables, Scuba diving meets the need of people with paraplegics from a sense of freedom without being restricted by gravity, as it is considered the appropriate sport for a person's need. Teaching some skills not only for training but within the physical and psychological preparation programs to any another sport.

### Conclusion

The study showed that after a three-week programmed diving training, the quality of life of people with disabilities has improved and they adopted elements of diving techniques. This shows that people with disabilities are as well qualified for recreational diving when accompanied by a diving instructor, which again suggests that disability in and under water does not represent a barrier for recreational underwater activities.

### References

**1-Abma, C. L., Fry, M. D., Li, Y., & Relyea, G. (2002).** Differences in imagery content and imagery ability between high and low confident track and field athletes. *Journal of*

*Applied Sport Psychology*, 14 (2), 65-75.

**2-American Psychological Association. (1992).** Graduate study in psychology (Vol. 25). American Psychological Association.

**3-Baron, R. M., & Kenny, D. A. (1986).** The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical consideration. *Journal of Personality and Social Psychology*, 51(6), 1173-1182.

**4-Bayertz, K., & Gutmann, T. (2012).** Happiness and Law.

**5-Bradburn, N. M., & Noll, C. E. (1969).** The structure of psychological well-being. Chicago, IL: Aldine Publishing Company.

**6-Briki, W. (2018).** Why do exercisers with a higher trait self-control experience higher subjective well-being? The mediating effects of amount of leisure-time physical activity, perceived goal progress, and self-efficacy. *Personality and individual differences*, 125, 62-67.

**7-Brinkman. (2002).** Culture and subjective well-being. *Journal of Economic Issues*, 36 (3), 830-834. Campbell, A., Converse, P. E., & Rodgers, W. L. (1976). *The quality of American life*. New York, NY: Russell Sage Foundation.

- 8- Buning, M. E., & Schmeler, M. R. (1999).** Effects of the Transition to Powered Mobility on Occupational Performance, 20.
- 9-Carin-Levy, G., & Jones, D. (2007).** Psychosocial Aspects of Scuba Diving for People with Physical Disabilities: An Occupational Science Perspective. *Canadian Journal of Occupational Therapy*, 74(1), 6–14. <https://doi.org/10.2182/cjot.06.07>.
- 10-Darwin Bawasanta,** Divers are generally happy people, <https://www.divefunatics.com/divers-are-generally-happy-people/>.
- 11-Delhey, J., & Steckermeier, L. C. (2016).** The good life, affluence, and self-reported happiness: Introducing the good life index and debunking two popular myths. *World Development*, 88, 50–66.
- 12-Diener, Emmons, Larsen, and Griffin (1985)** proposed the Satisfaction with Life Scale, which is composed of three constructs: positive effect, adverse effect, and life satisfaction. Campbell, Converse, and Rodgers (1976)
- 13-Diener, E., Emmons, R., Larsen, J., & Griffin, S. (1985).** The satisfaction with life scale. *Journal of Personality Assessment*, 49 (1), 71–75
- 14- Dupuy, H. J. (1970).** Developmental rationale: Substantive, derivative and conceptual relevance of the general well-being schedule. Fairfax, VA: National Center for Health Statistics.
- 15- Fleming, N., & Melemed, Y. (1977).** Report of a scuba diving training course for paraplegics and double leg amputees with an assessment of physiological and rehabilitation factors. *SPUMS Journal of the South Pacific Underwater Medicine Society*.MS, 7(1), 1. <http://archive.rubiconfoundation.org/xmlui/handle/123456789/6132?show=full>.
- 16- Graver, D. K. (2004).** Aquatic rescue and safety. Champaign, IL: Human Kinetics
- 17-Heimer, S., & Relac, M. (1998).** The importance of recreational sport and sports programmes during rehabilitation and post rehabilitation of the physically disabled. *Kinesiology*, 30(1), 57-62.
- 18-Ho, L. M., Yang, S. L., & Lin, J. C. (2019).** Effects of Scuba Divers' Social Support on Happiness. *Advances in*

Hospitality and Leisure (Advances in Hospitality and Leisure, 15, 113-127.

**19-Hsing, C. C. (2005).** Reflections on subjective well-being measures. *Indigenous Psychological Research in Chinese Societies*, 24, 301–323.

**20- International Association for Handicapped Divers 2020.**

**21-Li-Ming Ho, Siou-Lan**

**Yang, Jao-Chuan Lin.**

(2019). Effects of Scuba Divers' Social Support on Happiness Advances in Hospitality and Leisure, ISBN: 978-1-83867-956-9, eISBN: 978-1-83867-955-2 ISSN: 1745-3542 Publication date: 14 October 2019)

**22-Lin, Y. , Huang, W. ,**

**Yang, C. , & Chiang, M. (2014).** Work-leisure conflict and its associations with well-being: The roles of social support, leisure participation and job burnout. *Tourism Management*, 45, 244–252.

**23-Lorenz, O. (2018).** Does commuting matter to subjective well-being? *Journal of Transport Geography*, 66, 180–199.

**24- Lu, L. , & Hu, C.-H. (2005).** Personality, leisure experiences and happiness. *Journal of Happiness Studies*, 6(3), 325–342.

**25-McDavid, L., Cox, A. E., & Amorose, A. J. (2012).** The relative roles of physical education teachers and parents in adolescents' leisure-time physical activity motivation and behavior. *Psychology of Sport and Exercise*, 13(2), 99107.

**26-Moore, M. R. (2002).** An American's journey to kindergarten's birthplace. *Childhood Education*, 79(1), 15.

**27-Moore, A., & Lynch, H. (2018).** Understanding a child's conceptualization of well-being through an exploration of happiness: The centrality of play, people and place. *Journal of Occupational Science*, 25(1), 124-141.

28-Pamela E. Wilson MD  
Gerald H. Clayton PhD  
(2010). *Sports and Disability*, <https://doi.org/10.1016/j.pmrj.2010.02.002>

**29-Patkiewicz, J. (2015).** The specificity of diving of the disabled. *Physiotherapy/Fizjoterapia*, 23(1).

**30-Sheridan, D. , Coffee, P. , & Lavalley, D. (2014).** A systematic review of social support in youth sport. *International Review of Sport and Exercise Psychology*, 7 (1), 198–228.

**31-Sturgess, C. E. N., & Clatworthy, M. C. (1981).** A scuba diving acquaintance course for the severely disabled. *South Pacific Underwater Medicine Society Journal*, 11, 27–31.

Annex (1)

### **Oxford Happiness Questionnaire**

The Oxford Happiness Questionnaire was developed by psychologists Michael Argyle and Peter Hills at Oxford University.

#### **Instructions**

Below are a number of statements about happiness. Please indicate how much you agree or disagree with each by entering a number in the blank after each statement, according to the following scale:

- 1 = strongly disagree
- 2 = moderately disagree
- 3 = slightly disagree
- 4 = slightly agree
- 5 = moderately agree
- 6 = strongly agree

Please read the statements carefully, some of the questions are phrased positively and others negatively. Don't take too long over individual questions; there are no "right" or "wrong" answers (and no trick questions). The first answer that comes into your head

is probably the right one for you. If you find some of the questions difficult, please give the answer that is true for you in general or for most of the time.

#### **The Questionnaire**

- 1-I don't feel particularly pleased with the way I am. (R)
  - 2- I am intensely interested in other people.
  3. I feel that life is very rewarding.
  4. I have very warm feelings towards almost everyone.
  5. I rarely wake up feeling rested. (R)
  6. I am not particularly optimistic about the future. (R)
  7. I find most things amusing.
  8. I am always committed and involved.
  9. Life is good.
  10. I do not think that the world is a good place. (R) \_
  11. I laugh a lot.
  12. I am well satisfied about everything in my life.
  13. I don't think I look attractive.(R) 14.
- There is a gap between what I would like to do and what I have done. (R)
15. I am very happy.
  16. I find beauty in some things.
  17. I always have a cheerful effect on others.
  18. I can fit in (find time for) everything I want to.

19. I feel that I am not especially in control of my life. (R)
20. I feel able to take anything on.
21. I feel fully mentally alert.
22. I often experience joy and elation.
23. I don't find it easy to make decisions. (R)
24. I don't have a particular sense of meaning and purpose in my life. (R)
25. I feel I have a great deal of energy.
26. I usually have a good influence on events.
27. I don't have fun with other people. (R)
28. I don't feel particularly healthy. (R)
29. I don't have particularly happy memories of the past. (R)

### Calculate your score

#### Step 1. Items marked (R) should be scored in reverse:

For example, if you gave yourself a "1," cross it out and change it to a "6."

Change "2" to a "5"

Change "3" to a "4"

Change "4" to a "3"

Change "5" to a "2"

Change "6" to a "1"

Step 2. Add the numbers for all 29 questions. (Use the converted numbers for the 12 items that are reverse scored.)

Step 3. Divide by 29. So your happiness score = the total (from step 2) divided by 29.

#### Your Happiness Score: Interpreting the score, by Stephen Wright

1to2: Not happy. If you answered honestly and got a very low score, you're probably seeing yourself and your situation as worse than it really is. I recommend taking the Depression Symptoms test (CESD Questionnaire) at the University of Pennsylvania's "Authentic Happiness" Testing Center. You'll have to register, but this is beneficial because there are a lot of good tests there and you can re-take them later and compare your scores.

2to3: Somewhat unhappy. Try some of the exercises on this site like the Gratitude Journal & Gratitude Lists, or the Gratitude Visit; or take a look at the "Authentic Happiness" site mentioned immediately above.

1to4: Not particularly happy or unhappy. A score of 3.5 would be an exact numerical average of happy and unhappy responses. Some of the exercises mentioned just above have been tested in scientific studies and have been shown to make people lastingly happier.



4: Somewhat happy or moderately happy. Satisfied. This is what the average person scores.

4to5: Rather happy; pretty happy. Check other score ranges for some of my suggestions.

5to6: Very happy. Being happy has more benefits than just feeling good. It's correlated with benefits like health, better marriages, and attaining your goals. Check back I'll be writing a post about this topic soon.

6: Too happy. Yes, you read that right. Recent research seems to show that there's an optimal level of happiness for things like doing well at work or school, or for being healthy, and that being "too happy" may be associ-

ated with lower levels of such things.

### Reference

**Hills, P., & Argyle, M. (2002).**

The Oxford Happiness Questionnaire: a compact scale for the measurement of psychological well-being. *Personality and Individual Differences*, 33, 1073–1082.

Stephen Wright is a visiting scientist at Georgetown University's Brain and Language Lab, and founder of [meaningandhappiness.com](http://www.meaningandhappiness.com)

### Reference:

<http://www.meaningandhappiness.com/oxford-happiness-questionnaire/214/>