

PROMOTION TO INCREASE SENIOR PARTICIPATION IN THE SPORT OF DISC GOLF



OBJECTIVE:

To encourage PDGA members and others to introduce recreational disc golf to the growing Senior population.

Produced by the PDGA Senior Committee 2010
Chairman: Don Dillon

INDEX

<u>Section Name</u>	<u>Page</u>
WHY SHOULD YOU BE INTERESTED?	1
WHY SHOULD SENIORS BE INTERESTED?	2
SUGGESTIONS ON HOW TO REACH SENIORS	6
CONSIDERATIONS CONCERNING SENIORS AND DISC GOLF	7
SOME THOUGHTS AND SUGGESTIONS ON DEMONSTRATIONS AND LESSONS	8
IDEAS FOR THE “HANDS-ON” CLINIC	9
APPENDIX A	12
APPENDIX B	14

WHY SHOULD YOU BE INTERESTED?

- **To increase the number of players.**
- **More players means more disc golf activities.**
- **More activities means more interest in disc golf.**
- **More interest means more courses and improvements.**
- **Seniors have the potential of providing political and financial support.**
- **Seniors have the time and interest in supporting course maintenance.**
- **Seniors can be the focus for publicity which in turn can draw more players of all ages to the game.**
- **Some seniors will want to be competitive which will add more players for tournaments and payouts.**
- **Some seniors will join the PDGA which will increase membership and revenue.**
- **Increased senior players will add a new dimension to disc golf socialization benefits.**
- **You will be contributing to making a healthier and happier senior population.**
- **You may enjoy the sport more by getting your own parents and relatives into an active form of family recreation.**
- **The US Census Bureau predicts that the age group of 50 years and older will increase by 65% through 2048.**
- **Currently the PDGA membership in this group is only 4%.**

WHY SHOULD SENIORS BE INTERESTED?

- **According to the US Census Bureau, the senior population will increase by 65% in the coming years.**
- **People who stay even moderately fit as they age may live longer than those that do not stay fit. Reuters Health reported that a “study of nearly 4,400 healthy US adults, found that roughly 20 percent with the lowest physical fitness levels were twice as likely to die over the next nine years as the 20 percent with the next-lowest fitness levels.”**
- **The Mayo Clinic lists 4 elements of fitness training as “Aerobic, Muscular, Stretching and Core Stability”. Walking will help trim your waist line and improve your health and stretching will improve flexibility. Disc Golf exposes the player to all four elements.**
- **The Mayo Clinic also states the 7 benefits of regular physical activity as: “Improves your mood, Combats Chronic Diseases, Helps you manage your weight, Boosts your energy level, Promotes better sleep, Can put spark back into your sex life, and finally, can be FUN!!”**
(www.mayoclinic.com/health/exercise)
- **The National Institute of Arthritis and Musculoskeletal and Skin Diseases states that “remaining physically active reduces your risk of heart attack disease” as well as other conditions such as high blood pressure, obesity and mood disorders. “Exercise is one of the best ways to preserve your bone density and prevent falls as you age.” Walking is one of the exercises they recommend. (www.niams.nih.gov/health)**
- **The American Heart Association states: “Exercise your heart. Your heart’s workload can be increased in two ways: (1) by increasing the amount of blood the heart pumps, and (2) by pumping at a higher blood pressure. Physical activity makes your heart work more in both ways.” “Low-intensity sports like golf---don’t put much strain on the heart.”**
(www.americanheart.org)
- **Richard Shank reports: “Researchers at Iowa State University recently performed a randomized clinical trial in order to examine the benefit that physical exercise can have on the cognitive performance. They came upon two key findings: that aerobic exercise in older adults can improve**

cognitive performance, especially tasks designed to test the brain's executive functions. In addition, they discovered that cardio-respiratory improvements were not necessary for enhancements in the brain function." (http://www.matherlifeways.com/aia02_09/exercise-cognitive-function.html)

- **The National Institute on Aging has published a pamphlet, “Age Page Exercise and Physical Activity: Getting Fit For Life”, in which they state that “staying active can help you: (1) Keep and improve your strength so you can stay independent, (2) Have more energy to do the things you want to do, (3) Improve your balance, (4) Prevent or delay some diseases like heart disease, diabetes, breast and colon cancer, and osteoporosis, and (5) Perk up your mood and reduce depression.” Disc Golf can do this!**

- **Dr. Betsy Shoenfelt, a Sports Psychologist from Western Kentucky University, provided a very interesting and informative series of lectures on PDGA Radio from 2004-2006. This sports psychology series was based on the mental aspects of playing disc golf such as concentration, visualization, attitude, etc. Dr. Shoenfelt has provided research results for this current promotion that senior exercise “such as the walking involved in disc golf, stopped the loss of decline in brain function of seniors.” In addition, “physical exercise, including leisure-time activities” helps to maintain cognitive vitality and prevent cognitive decline.” See Appendix A for her credentials, further results and study references.**

- **Dr. Bradley D. Hatfield, Ph.D. FACSM, FAAKPE, Professor, Dept. of Kinesiology, University of Maryland and his Graduate Student, Jo Zimmerman, conducted a special research of available information concerning the mental (brain) benefits of disc golf exercise. Research indicates that:**
 - Moderate aerobic exercise*, like walking long courses, benefited executive functions of the brain that are key to disc golf in planning shots, resolving problems of a bad lie, or working around an obstacle, as well as, maintaining concentration from distracting noises.
 - Moderate aerobic exercises* also appears to maintain the physical structure of the brain. This benefit comes from activity such as walking over and through the various terrains that challenge shots.

Physical Skill Training (throwing techniques), *Strategy* (planning the shots), *Working Memory* (score keeping) and *Spatial Orientation* (overall course layout) can all contribute to maintaining brain function.

Social Contact with other players can help with mood, memory and motivation to stay engaged in life and possibly reduce the risk of depression.

See Appendix B for the entire report.

- **Ann L. Smiley-Oyen, Ph.D., Associate Professor, Department of Kinesiology, Iowa State University and associates found in a follow-up study to Kramer and associates' work that people who were sedentary and then engaged in 30 minutes of moderate aerobic activity three times a week for 6 months improved executive functioning specifically when there was a time constraint, i.e., reaction time was involved. This NIH-funded study was published in *Annals of Behavioral Medicine*. (<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2748860>)**
- **A study reported by the AARP reports that exercise helps prevent type 2 diabetes, lowers the risk for high blood pressure, colon cancer, and breast cancer; and helps relieve insomnia, anxiety and depression as well as helps ward off Alzheimer's disease and other forms of dementia. (www.aarp.org/health/conditions/articles/harvard_a_guide-to-alzheimer-s-disease)**
- **Nicola T. Lautenschlager, M.D. of the University of Australia and colleagues report that: "physical activity intervention would reduce the rate of cognitive decline among 138 adults age 50 and older at increased risk of dementia" and "exercise improves cognitive function in older adults with subjective and objective mild cognitive impairment."**
- **The Alzheimer's Association prevention tips include: "staying mentally active, being socially involved and adopting a brain-healthy diet." They go on to say that their research "discovered a link between regular exercise and a decreased risk of contracting the illness."**
- **Disc Golf provides an opportunity for seniors to socialize with other seniors and get away from the TV while exercising.**
- **Disc Golf is inexpensive.**

- **Disc Golf is self-paced, no need for stress or high goals of success. Achieve what ever level of competency you desire.**
- **No need for competition except with your self for a better score.**
- **Competition with others is available, if desired.**
- **Opportunity to socialize with peers and younger generations.**
- **Disc golf can present a new Lease on Life.**
- **One senior stated that “disc golf offers one a sense of accomplishment and the activity keeps you moving but it does not become exhausting nor cause extreme fatigue. Disc golf helps one hone the whole being by contributing to the physical, mental, emotional and social well-being.”**
- **Another senior described disc golf as :**
 - Doesn’t cost money to play**
 - Investment cost is low**
 - Single or group activity**
 - Creative exercise**
 - Great at any age**
 - Outdoor activity**
 - Lowers stress**
 - Fun to play**

—→ **DISC GOLF**
- **Have FUN!!!!!!**

|

SUGGESTIONS ON HOW TO REACH SENIORS

- **Make a list of potential senior organizations and facilities in your area with contact names and addresses, such as: Senior Citizen Councils, City or County Aging Bureaus, Senior Citizen newspapers (usually handed out free at gyms and grocery stores), Township or Community Newsletters, YMCA/YWCA, Churches, Retirement Facilities, and other media/events.**
- **Formulate a time directed plan to approach the “Target” with the greatest potential for either using an existing disc golf course or has the facility for establishing a nine basket course.**
- **Formulate a Lesson Plan for presenting an “Orientation Presentation” and a follow up “Hands-On” series of 4 lessons or so. (See suggestions on the following pages).**
- **Arrange for a personal meeting with the Director of the Target group to present your idea and offer. Define what disc golf is and how it differs from Frisbee. Use the medical information available, mention the growth of disc golf, all the benefits for their seniors (to include inexpensive, healthy, social, appeals to grandchildren), and your willingness to instruct. Suggest the eventual formation of an in-house, informal club, with possible competition between other local seniors, if desired.**
- **Write up an article about seniors and disc golf for local senior newspapers or community newspapers. Offer to hold an orientation meeting for interested seniors.**
- **Publish a Flyer for posting at places where seniors meet for coffee or walking exercise.**
- **Conduct an orientation “Clinic” at an established local disc golf course. Perhaps local players would help you.**
- **Contact local sport stores, medical facilities, drug stores, doctors and insurance companies to sponsor your efforts.**
- **Promote Recreational Disc Golf. Competition may follow.**

CONSIDERATIONS CONCERNING SENIORS AND DISC GOLF

- **Seniors may be reluctant to try something new. Such thoughts as: Why should I try this?, I don't play sports!, It sounds and looks too hard for me!, I don't have the money to spend!, I have some physical restrictions!, I am too old!, I can't compete with these young kids!, I don't know anything about it! And whatever other excuse they can think of to not try it. Each of these objections can be overcome by the great advantages of disc golf, which you can present! It is inexpensive, self-regulated, healthy in several ways, can be adapted to physical problems, does not require competition except with yourself--come try it, I will help!**
- **Expense is always a question. If they see someone with a bag of 15 discs, this will surely scare them away from a cost, as well as weight, standpoint. They must be convinced that they only need three discs at the most and can get by with just one for recreational DG. Too many discs and weights present too many decisions and takes away the fun.**
- **Physical problems need to be addressed by illustrating that they do not need to huff and puff or run up on tee shots. There are different ways to throw in order to compensate for physical problems and distance is not as important as short accurate throws. Score is not important except as a sign of improvement.**
- **Disc Golf nomenclature will overwhelm seniors. Keep it simple!**
- **Seniors will have different attitudes that must be considered. After a life time of experiences, they may be afraid of failure or even over confident resulting in slow progress or hasty mistakes.**
- **Demonstrations of long throws by "strong armed" players will impress the seniors and at the same time illustrate what they can't do. It is important that your demonstrations do not intimidate potential new players.**

SOME THOUGHTS AND SUGGESTIONS ON DEMONSTRATIONS AND LESSONS

- **Introduce yourself. Explain who you are, what your DG experience is and the benefits you have received. Explain that you want them (your audience) to share these benefits.**
- **Provide an illustration of the difference between Frisbee and disc golf. Show them a Frisbee and a DG disc.**
- **Provide a brief history of Frisbee into disc golf. You might even have an old pie tin to show them what started the game and inspired the name from the Frisbee Pie Company of Bridgeport, Connecticut.**
- **Relate DG to ball golf, ie.: tee, fairway(woods), hole (basket), par, different clubs (driver, approach, putter) and number of clubs. BUT, here, assure them that 15 discs are not necessary (1-3 will do) and \$1,000 per bag compares to \$10-30 dollars for discs. Also, there are no “tee times”, club fees, scheduling issues, special clothes, etc., to complicate the game.**
- **Address some of the fears mentioned in the previous page. Score is not important!! Have fun, enjoy the exercise!! Socialize, play with your grandchildren, friends and neighbors. Work on any physical problems you have in an easy, self-timed manner.**
- **At this point, you might introduce a DVD available at PDGA. This DVD features 86-year-old Jack Roddick, holder of 11 World Titles, talking about the history of DG. Then, he provides instruction to residents of a retirement facility on their own DG nine-basket course.**
- **If possible, have as many baskets and discs available for a short “hands-on” play after the formal presentation. Let them get a feel for the play and the ring of chains being hit by the discs. Make the distance short and keep the throws simple putts. The temporary folding baskets available from on line stores are more practical for this activity but eliminate the “ring”.**

- **After the play session, invite the participants to sign up for a “Hands-On” clinic to be held at a local established DG course or a temporary course set up on the grounds of the facility or nearby.**
- **At such presentations, expect only 5 to 10 percent to sign up for the Clinic. Many of the attendees at the Orientation Presentation will have attended out of a sense of entertainment and may be in wheel chairs or walkers. Don’t let this discourage you because even with this, they will help spread the word. Be sure to have some materials for them to take along after the orientation, maybe include a mini-disc for them to show others.**
- **Concentrate on the ones that signed up. Expect that some percentage of them will not show up for the first clinic session. Don’t get discouraged because you are at the start of a process.**

IDEAS FOR THE “HANDS-ON CLINIC”

Equipment:

- **The amount of equipment needed depends on the number of students expected. It is suggested that you have one basket per four students and two discs for each student. The folding temporary baskets offer the most flexibility and ease of transport. Two foot by two inch cloth strips with a slight weight sewn in the end would be helpful in practicing the “snap” of the wrist. This cloth would be used like you may have used a towel to snap the bottom of a classmate in the locker room.**
- **If baskets are not available, then substitute a pole or back panels. If nothing else is available have the students throw putters to each other.**
- **The discs should be light (150 grams is suggested), all the same weight and two per student so that they can correct the first throw while it is fresh in their minds. More discs per student would be better if they are available. The idea is to reduce the time and energy lost in recovering the thrown discs.**

Location:

- The best location would be outdoors in a sunny area. However, indoor areas such as gyms, ballrooms, community rooms, vacate buildings and the like can be very useful.

Lesson Plan:

- For a four-week clinic consisting of one hour sessions, it is suggested that:
 1. The first session would consist of demonstrating and practicing stance, grip, concentration, direction of aim, body movement, snap and follow through. Baskets would not be necessary.
 2. The second session would review lesson 1 and work on tee and approach throws.
 3. The third session would center on putting. Here, you might put four students to each basket with two on each side of the basket. The idea here is to reduce the number of baskets needed and to reduce retrieval times. Two students on side A would putt two or more discs toward the basket and the students standing behind on side B. The students on side B would retrieve the discs and putt towards the basket and the students standing behind side A.
 4. The final session would put it all together and play a complete round of how many baskets that are available.
- This final session could be followed up in a couple of weeks to see how the students are progressing. Take this opportunity to encourage these new players to try their skills on an established DG course.
- The National Institute on Aging makes a number of suggestions for Senior exercise activities:
 1. Make it Fun
 2. Build up Endurance (remember, older people have less endurance, that is why one hour sessions are suggested)
 3. Build Strength - start with simple stretch exercises
 4. Improve Balance
 5. Improve Flexibility
 6. Make it Interesting
 7. Make it Rewarding
 8. Be Safe
 9. Make it Affordable

IN CLOSING

The above thoughts, suggestions and ideas are not meant to be all inclusive or the perfect approach to encouraging seniors to play disc golf.

They are meant to provide information to stimulate your thinking and action to achieve the goal of introducing seniors to the benefits of playing disc golf.

It would be very helpful if members reported their successes and efforts to the PDGA Senior Committee so that others can learn from their experiences.

SPECIAL THANKS TO:

Doctors/Professors: Betsy Shoenfelt, Ann Smiley-Oyen and Bradley Hatfield and Graduate Student Jo Zimmerman for their time and effort in providing specialized information to support this project.

Ken Lemkelde for his help in layout and typesetting.

APPENDIX A



A LEADING AMERICAN UNIVERSITY WITH INTERNATIONAL REACH

October 1, 2009

To Whom It May Concern:

I am writing this letter in support of Don Dillon's efforts to encourage seniors to engage in disc golf as both an enjoyable activity and as a boost to psychological well being. I am a performance psychologist and a professor on the faculty of Western Kentucky University in Bowling Green, KY. I am a licensed industrial/organizational psychologist, a certified consultant with the Association for Applied Sport Psychology, and a member of the United States Olympic Committee Registry of Sport Psychologists. I became aware of the Professional Disc Golf Association when I was contacted in 2005 to contribute sport psychology applications for disc golf for the PDGA Radio News. Since this initial encounter, I have had a number of very positive interactions with PDGA members and have been impressed with the enthusiasm they show for their game.

Disc golf is something of an underdog sport as it receives far less attention and notoriety than its ball golf counterpart. Yet, senior disc golf participants share in the same physical and mental benefits of exercise as senior ball golfers and other seniors who participate in other regular exercise endeavors. As a sport psychologist, I will speak to the psychological benefits of disc golf rather than addressing the many physical benefits of regular exercise for seniors.

Not surprisingly, there is no known research specifically addressing the benefits of disc golf for seniors. In fact, among some sport psychologists, disc golf is known as the "new frontier"¹ because there is little research specific to the sport. There is, however, substantial research indicating the positive effects of exercise on the psychological well being of seniors^{2,3,4} and some research⁵ that specifically indicates that ball golf has psychological benefits for seniors. Earlier research on the relationship between exercise

¹ Shoenfelt, E. L., Berry, D. C., & Severs, B. R. (2008, September). Disc golf: The new frontier: Mental skill use of professional and amateur disc golfers. *2008 Conference Proceedings of the Association for Applied Sport Psychology*, 96.

² Churchill, J. D., et al. (2002). Exercise, experience, and the aging brain. *Neurobiology of Aging*, 23, 941-955.

³ Colcombe, S. J. et al. (2003). Aerobic fitness reduces brain tissue loss in aging humans. *The Journals of Gerontology Series A: Biological Sciences and Medical Sciences*, 58, M176-M180.

⁴ Fillit, H. M. et al. (2002). Achieving and maintaining cognitive vitality with aging. *Mayo Clinic Proceedings*, 77, 681-696.

⁵ Farahmand, B., Broman, G., de Faire, U., Vagero, D., & Ahlbom. (2008). Golf: a game of life and death – reduced mortality in Swedish golfers. *Scandinavian Journal of Medicine & Science in Sports*. DOI: 10.1111/j.1600-0838.2008.00814.x.

The Spirit Makes the Master

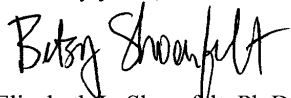
Department of Psychology | Western Kentucky University | 1906 College Heights Blvd. #21030 | Bowling Green, KY 42101-1030
phone: 270.745.2695 | fax: 270.745.6934 | web: www.wku.edu

Equal Education and Employment Opportunities • Printing paid from state funds, KRS 57.375, 2006 • Hearing Impaired Only: 270.745.5389

and cognitive functioning / psychological well-being indicated somewhat inconsistent results. More recently, however, research results concerning the benefits of exercise for seniors are more straight forward. For example, Churchill et al.² found positive effects of exercise for seniors that related directly to important activities involving cognitive control processes such as planning, scheduling, coordination, and working memory. Colcombe et al.³ found solid support that aerobic activity, such as the walking involved in disc golf, stopped the loss of decline in brain function of seniors. Fillit, et al.⁴ indicated that recent research supports the finding that engaging in “physical exercise, including enjoyable leisure-time activities” helps to maintain cognitive vitality and prevent cognitive decline. Other research⁶ has reported that the cognitive functioning of 60 to 75 year old men and women engaging in regular aerobic exercise showed significant improvement in comparison to non-exercisers and those participating in strength and toning exercises. Certainly, given the nature of the game of disc golf, senior disc golfers should enjoy the same benefits indicated in these research studies.

Disc golf is growing in popularity. The PDGA reports that some 250,000 individuals play at least once a month and between 4 million and 6 million worldwide have played at some time. However, the bulk of disc golf players are between the ages of 25 and 44. Despite that fact that disc golf is particularly well suited to seniors, little effort has been devoted to attracting them to the sport. Disc golf is an inexpensive sport as discs are relatively cheap and most courses are in public parks where there usually are no green fees. The sport involves being outdoors, walking, throwing the disc, and, typically, interacting with other players. Research indicates the very positive effects for seniors of regular aerobic exercise, such as disc golf, on cognitive functioning and psychological well-being. Individuals are more likely to maintain regular exercise that is couched in an enjoyable, social activity such is disc golf. Accordingly, I very much support the efforts of Don Dillon, Chair of the Senior Committee of the PDGA, to promote the sport of disc golf to seniors. I encourage you to likewise provide Don with your support.

Sincerely yours,



Elizabeth L. Shoenfelt, Ph.D.
Professor of Psychology
Licensed I/O Psychologist
Certified Consultant, Association for Applied Sport Psychology
Member USOC Registry of Sport Psychologists
270-745-4418
betsy.shoenfelt@wku.edu

⁶ Dubbert, P.M. (20020). Physical activity and exercise: Recent advances and current challenges. *Journal of Counseling and Clinical Psychology*, 70, 526-536.

APPENDIX B

Brain Benefits from Disc Golf

By

Dr. Bradley D. Hatfield, Ph.D. FACSM, FAAKPE

The evidence that exercise is beneficial for the structure and function of the brain is very compelling, and holds true across the lifespan. Regular physical activity does seem particularly relevant for brain development in children and young adults, up to age 25, and for maintaining capacity in mature adults, especially over the age of 60. The physical benefits of regular exercise are well-known and well understood. Less well-known is the great potential to support or even enhance *brain* health by participating in regular moderate physical activity, and there is no age limit to these benefits.

1 - Moderate aerobic exercise (like walking a long course) maintains and perhaps even improves brain function in healthy older men and women.

Dr. Arthur Kramer and his colleagues at the University of Illinois, Champagne-Urbana, have studied the effects of regular physical activity on the brains of adults over the age of 60 (Kramer et al., 1999). They find consistent benefits to mental function in general, but a particularly strong benefit to executive functions. These are processes such as planning, problem solving, and maintaining focus when distractions are present. The executive functions are key to disc golf, to plan shots for a given hole, to resolve a bad lie or work around an obstacle, and to hold attention on the shot with normal outdoor sounds or noise from other golfers. In fact, these executive functions so valuable to disc golf enjoyment are also critical to independent living.

2 - Moderate aerobic exercise also appears to help maintain the physical structure of the brain, reducing even the normal amount of tissue shrinkage in some areas critical to thinking and problem solving (Colcombe et al., 2003).

The types of physical activity that seem to provide these benefits are mostly aerobic in nature, including walking, hiking, biking and so forth. Many disc golf courses are situated on parkland, and provide varied terrain to challenge the disc golf shots. The length of the courses, even when played most efficiently, will usually provide at least 2 miles of walking during an 18-hole

round. Well-groomed municipal courses may have flat to gently rolling hills for the players, while more rugged natural courses may require substantial hiking to manage elevation changes. With greater physical challenge comes greater demand on the heart and lungs, improving cardiovascular health, and the additional benefits from increased blood flow to the brain.

3 - Physical skill training (throwing techniques), strategy (plan for shots), working memory (score keeping), and spatial orientation (overall course layout) can all contribute to maintaining brain function.

The process of learning a game such as disc golf stimulates several areas of the brain. The motor areas direct and refine movement based upon information received from the visual and sensorimotor areas. As skill improves with practice, the brain works more efficiently, allowing a shift of focus to the planning of shots and strategy of a whole game. This controlled shift is one of the executive functions, already shown to dramatically improve with aerobic activity. Additionally, all of the learning and spatial orientation of a game like disc golf will engage a region deep within the brain, where memories are generated and retrieved, the hippocampus. Physical activity also stimulates and protects the hippocampus by promoting the release of neurotrophic (brain nourishing) agents. Neurotrophins seem to preserve existing brain cells by encouraging normal function and damage repair, and they may even encourage growth of new brain cells (Cotman & Engesser-Cesar, 2002).

4 - Social contact with other players can help with mood, memory, and motivation to stay engaged in life, and possibly reduce the risk of depression.

Social support may be linked to changes in several brain chemicals. Reductions in stress hormones such as cortisol, which can have negative effects on the brain (Buckworth & Dishman 2001), might in turn reduce the subtle decline associated with long-term psychological stress. In a large study of older adults in Canada, social engagement activities like book clubs, playing card games, or attending classes or church, were linked to a reduced risk of mental decline and dementia. Social activities that had a physical component as well, such as dancing or playing recreational sports, showed an even stronger protective effect (Laurin et al., 2001).

5 - Any physical activity, be it aerobic or not, skilled or simple, and at any level of intensity from slow walking to intense running can improve mood and reduce or prevent depression.

The link between physical activity and improved mood has been more difficult to study, partly because mood is subjective and can vary in a short time frame. However, Landers & Arent (2007) have summarized recent research and have concluded that the evidence for positive effects resulting from exercise is robust. This positive effect appears to have a dose-response relationship, meaning that to a point, more activity (or more intense activity) will provide a larger increase in mood or a greater improvement in depression.

In total, there is convincing evidence from a variety of sources that regular physical activity is as important for the brain as it is for the body. In fact, exercise provides particular benefit for some people, depending upon the most frequently examined genetic predictors of mental decline (Schuit et al., 2001). The American College of Sports Medicine has a campaign promoting physical activity and regular exercise called “Exercise is Medicine.” This stance is sensible for all, and may be essential for some. Disc golf is a fun way to get a daily dose.

- Buckworth, J. & Dishman, R.K. (2001). *Exercise Psychology*. Champaign, IL: Human Kinetics.
- Cotman, C.W. & Engesser-Cesar, C. (2002). Exercise enhances and protects brain function. *Exer. Sport Sci. Rev.*, 30(2), 75-59.
- Colcombe, S.J., Kramer, A.F., Erickson, K.I., Scalf, P., McAuley, E., Cohen, N.J., et al. (2003). Cardiovascular fitness, cortical plasticity, and aging. *PNAS*, 101(9), 3316-3321.
- Kramer, A.F., Hahn, S., Cohen, N.J., Banich, M.T., McAuley, E., Harrison, C.R., et al. (1999.) Aging, fitness and neurocognitive function. *Nature*, 400, 418-419.
- Laurin, D., Verreault, R., Lindsay, J., MacPherson, K, & Rockwood, K. (2001). Physical activity and risk of cognitive impairment and dementia in elderly persons. *Arch. Neurol.*, 58, 498-504.
- Landers, D.M. & Arent, S.M. (2007). Physical activity and mental health. In G. Tenenbaum & R.C. Eklund, (Eds.), *Handbook of Sport Psychology*, 3rd ed., (pp. 469-491). Hoboken, NJ: Wiley.
- Shuit, A.J., Feskens, E.M., Launer, L.J., & Kromhout, D. (2001). Physical activity and cognitive decline, the role of the apolipoprotein e4 allele. *Med. Sci. Sports Exerc.*, 33(5), 772-777.