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Samb, Howard D. *A Golf Club Fitting and Fitness/Nutritional Training Program to Aid College Golf Coaches In The Development of Their Golfers*

Abstract

This study was conducted to establish a training program for college golf coaches. The report provides the reasons for the need of such a program. It also provides a basic background into how the role of a college golf coach has evolved into being more than just a golf swing instructor. The report introduces a training program that includes custom golf club fitting, a golf specific fitness program, and nutritional plans that will increase the performance of college golfers. The report also discusses the training method used, the importance of training the adult learner and training evaluation. The researcher then organized the findings and formed a training program and recommendations for its execution.

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Chapter I: Introduction

For decades the emphasis on training and coaching college golfers focused primarily on the teaching of the golf swing. Coaches and golf instructors concentrated solely on the fundamentals of the golf swing: grip, stance, posture, alignment, tempo, etc. This method of preparation was adequate at the time; however, coaching innovators knew that there was a mental side to golf that was as important as the physical characteristics of being a good golfer. Time and effort was dedicated focusing on controlling emotions, staying in the moment, and concentrating on one shot at a time to obtain the best result. Course management was also a large part of the mental preparation. Golfers were instructed to have a game plan on how to play each hole and stick to their game plan throughout their round of golf. Both of these factors are still very important today in becoming a successful collegiate golfer, but there is more that can be done to improve a golfer's game.

College coaches are always searching for the next great method to help better prepare their golfers and team. Recently, there has been emphasis put on properly fitting golf equipment. The latest technology has provided ways to analyze each golfer's swing in terms of club head speed, angle of attack, ball flight, and golf ball spin rates. With this information a coach can properly fit the right clubs and golf ball to a golfer's individual swing characteristics. Currently very few college golf coaches have been trained to custom fit golf equipment for their athletes.

Another area that is becoming a significant factor in improving a collegiate golfers' performance is the importance of fitness and proper diet. Fitness and diet have always been considered a necessity for physical sports such as football, basketball, wrestling, and track but little emphasis was placed on fitness and diet for collegiate golfers. However some coaches believe that golfers need to be physically fit and diet conscious in order to improve their

performance to reach their potential. While many coaches understand that fitness and diet are beneficial, they are unaware of the specific training programs and nutritional plans that would best benefit their golfers.

Coaches are hopeful that having their players custom fit for their equipment and requiring fitness training and a balanced nutritional diet will help give their teams a competitive advantage.

Statement of the Problem

In college golf, many coaches do not have the knowledge or skill to custom fit golf clubs nor do they have the nutritional and fitness knowledge to create plans for their golfers.

Purpose of the Study

The objectives of this study are to:

1. Create a basic training program for coaches to learn how to custom fit golf equipment.
2. To develop a fitness and nutrition training program that would aid coaches to help maximize their golfers' abilities.

Assumptions of the Study

With the use of custom fit golf equipment the outcome should lead to more consistent ball striking, resulting in better golf shots and lower scores. Improved fitness and diet should better the golfers' strength, stamina, and overall physical performance. The implementation of these training programs will positively affect the golfers' consistency and scores.

Definition of Terms

ADDIE. Is an instructional system design model (analyze, design, develop, implement, and evaluate).

Angle of attack. The angle at which the golf club makes contact with the golf ball.

Bosu ball. An object shaped like half of a ball that is used in exercises that relate to balance and core.

Driver. A golf club used for hitting tee shots.

Free weights. A type of weight used in weight training also referred to as a dumbbell.

Golf ball speed. The velocity at which the golf ball leaves the face of the golf club.

Golf ball spin rate. The amount of backspin and sidespin that is imparted to the golf ball by the impact of the golf club.

Hitting board. Board, in which golf balls are hit off of, used in custom club fitting that helps determine the proper lie of a golf club.

Impact tape. Tape that is applied to the face and sole of a golf club, that is used in conjunction with a hitting board, to determine where a golfer's club impacts the ball during a golf swing.

Irons. A type of golf club which each club has a different loft.

Kettle bells. A piece of exercise equipment used in free weight training.

Launch angle. The angle at which the golf ball leaves the face of the golf club in relation to the ground at impact.

Launch monitor. A small electronic device that measures the golf balls launch conditions during the first few inches of flight.

Length. The physical length of an individual golf club.

Loft. The degree of angle on the face of a particular golf club. Each club has a different loft.

Medicine ball. A weighted ball used in exercises to develop core and torso strength. The medicine ball has different weights and sizes.

Resistance bands. A large rubber band type object used in resistance training.

Shaft flex. Refers to the amount that a shaft will bend as a result of how much force is applied.

Shaft type. Relates to characteristics of a golf shaft including material, flex, weight, and length.

Stationary weight machines. A piece of exercise equipment used to do various weight lifting exercises.

Swiss ball. An inflatable ball used for core and balance specific exercises.

Utility clubs. A type of golf club that is a hybrid of a wood and an iron.

Wedges. Golf club used for short shots around greens and out of sand traps.

Chapter II: Literature Review

To achieve a competitive advantage collegiate golf coaches need to know how to custom fit golf clubs for their players. In addition, they need to understand the nutritional and fitness needs of golfers. The literature review focuses on three areas that will allow college golf coaches to help their golfers' achieve greater success.

The first area discussed is to train and educate coaches on how to properly fit their golfers with custom fit golf equipment. Custom golf club fitting, in various forms has been available for several years. However, due to advancements in technology and the scientifically proven golf club fitting methods of today, golfers' scores can now be significantly improved by this process.

The second area investigates the need to train and provide coaches with important information regarding fitness and nutrition, and how it affects a golfers' performance. Fitness and nutrition have always been an important area of focus in sports such as football, basketball, track, and several other more strenuous sports. Today as college golf becomes more and more competitive, coaches at all division levels must seriously consider a fitness and nutrition program for their athletes to help increase their performance.

The third and final area discusses the ADDIE (Analyze, Design, Develop, Implement, and Evaluate) model to develop the actual training program. The ADDIE model was chosen as the instruction system due to the fact that it is straightforward. This model also provides a systematic learning processes as well as providing a great deal of structure. The ADDIE model also makes learning for adults easier and more efficient.

Variables of Properly Fitting Golf Equipment

To become an excellent golfer requires hard work, practice, patience, and a passion for the game that is unlike any other sport. There are several components to becoming a successful

golfer. One area that dramatically aids golfers in improving their game is the custom fitting of golf clubs (Acushnet Company, 2011). Custom fitting of golf clubs is a process whereby a trained fitting expert analyzes a golfer in several different areas and makes recommendations as to the golf equipment that would best serve the golfers' game (Ping, 2010). The golfers' size, age, strength, ability, physical limitations, and willingness to improve are all assessed during a player evaluation. The evaluation takes place prior to the actual physical fitting for the golf clubs.

The actual golf club fitting takes into account ball flight, launch angle, which direction the golfer's common misses generally travel, how hard the individual swings the club, and the tempo of the swing (Acushnet Company, 2010). The golfer's physical characteristics such as size of hands, length of arms, range of motion, flexibility, and strength are also observed and evaluated during this process.

The information gathered from the player evaluation and the golf club fitting process are then used to make recommendations to the golfer that will provide the best performing golf clubs. Not only should the clubs provide excellent performance but also give the golfer a sense of confidence the clubs he or she is using are the best possible fit for them and their game.

Karsten Solheim, founder of Ping Golf Company, was the innovator of custom fitting for golf clubs (Ping, 2010). In the 1970's Solheim, was the first club maker that understood that a standardized golf club for all golfers was not beneficial to the golfer. He devised a very basic static fitting system, which consisted of some measurements of the golfer to determine lie angle, club length, and grip size. These measurements entailed a simple observation of the angle of the club head in relation to the ground to determine lie angle (Ping, 2010). Measuring the distance of the hands hanging naturally at the golfer's' side to the ground determined the length of the

club. And the grip size was decided by the glove size of the golfer. From these measurements the club fitter would put together the specifications for the custom fit golf clubs. Solheim, who at one time was a NASA engineer, understood that this very basic system of club fitting was better than nothing (Ping, 2010). However, he knew that there needed to be more to the golf club fitting process.

Solheim and his company's engineers then took club fitting to the next level by adding a dynamic swing test (Ping, 2010). This test consisted of a golfer hitting golf balls from a hitting board to help determine the individual's set-up to the ball and swing characteristics (Ping, 2010). This process used hitting tape applied to the face and sole of the golf club. After hitting several balls off a hitting board, the fitter, using data charts provided by Ping Golf Company could make recommendations for the length and lie of the golf club. This was valuable information due to the fact that Ping's research confirmed the proper length and lie of a golf club greatly enhances the golfers' ability to hit the golf ball straighter. Solheim felt strongly that the club his company built was far superior to his competition. He only sold custom fit golf clubs, and his clubs could only be purchased at a golf club or country club pro shop (Ping, 2010).

Brett Porath, Director of club fitting for Titleist Golf Company, states that the key to properly fitting a golfer begins with a player evaluation (Acushnet Company, 2010). The golf club fitter needs to get to know the golfer, their game, and what their goals are. From that point using the fitter's expertise and knowledge, and the available technology hold the keys to a successful fit (Acushnet Company, 2010). It is important to understand that custom golf club fitting can benefit golfers of all abilities. Novice or recreational golfers that want to enjoy the game of golf can see improvement in their scores by being properly fit for their golf clubs. Professional or low handicap golfers can also see improvement. They demand that their custom

fit clubs provide exact ball flight, spin rates, and distance control that can be relied upon to perform at the highest of all levels of competition. Titleist has spent over thirty years conducting in-depth research on swings of PGA Touring Professionals to thirty handicappers (Acushnet Company, 2010). They are confident that with their fitting method and a competent, well trained custom golf club fitter, golfers of all levels can be fit more precisely than ever before (Acushnet Company, 2010). This allows tournament golfers to be more competitive and average golfers to enjoy the game more.

Hughes (2010), a member of the Professional Golfers Association of America, concluded that even though there has been significant improvements in all areas of club fitting in the last five years, a good fit still relies on the knowledge of the person doing the fitting. There is no substitute for a club fitter that has a trained eye for observing ball flight and a true understanding and knowledge of the golf swing.

Three Methods of Properly Fitting Golf Equipment

There are three basic methods of custom fitting golf equipment. The most basic is to analyze the golfers' physical characteristics and have them hit golf balls off a hitting board (Davies, 2009). Height, length of arms, size of hands, and overall strength are all key aspects that need to be measured and considered in custom club fitting. Tools needed include a golf club, golf balls, a hitting board (which will help determine the lie of the golf club), and impact tape (which will show the fitter where the golfer most often strikes the ball on the face of the club). Titleist golf company fitters maintain that all custom fittings should begin with the golfer hitting with his or her own equipment to create a baseline condition to reference during the fitting process (Acushnet Company, 2011). By doing this, the person being fit can see the

improvements to spin rate, launch angle, ball speed, and carry distance that are achieved through the fitting process.

The second method uses all of the same elements included in the basic method of club fitting but with the introduction of a launch monitor (Acushnet Company, 2010). A launch monitor is a small electronic device that measures the golf ball's launch conditions during the first few inches of flight. It sits on the ground about a foot from the golf ball that is going to be hit during the fitting process. The launch monitor captures three dimensional measurements and gives instant data on each shot on a small monitor (Acushnet Company, 2011). The Titleist golf company states that the most accurate and precise results found during club fitting are found with the use of a launch monitor. Hitting golf balls on a launch monitor gives the fitter and the golfer very precise information regarding: ball speed, launch angle, back spin, side spin, and side angle. The launch monitor is also able to calculate the following ball flight conditions: down range flight, offline, flight time, max height, and total distance (Tanner, 2011).

The third and most comprehensive method of custom golf club fitting includes both methods, the physical characteristics of the golfer and the launch monitor plus the use of a golf simulator. The simulator provides some of the same information the launch monitor does but the additional information it provides is club head speed at impact, face angle at impact, club head path, club rotation before impact, impact point, back swing tempo, and total carry distance (DeadSolid Simulations, 2009). The system also provides a print-out of all the variables for the golfer as well as the fitter (DeadSolid Simulations, 2009). Realistic swing graphics, reverse angle views of the golf swing and ball flight animation are also very helpful functions that the golf simulator provides. Although the use of a golf simulator generally provides the most comprehensive process in custom golf club fitting it is accepted that an accurate fitting can be

done without the use of a golf simulator. All of the important data gathered in a basic club fitting process and the additional information obtained with the use of a launch monitor provide a trained fitter all the information needed to make a successful and proper fit. The golf simulator, if available, basically confirms the findings of the data generated with the basic fitting process using a launch monitor (Ping, 2010). It also provides graphics, animations, and visuals that are generally more helpful from an instruction standpoint than a fitting aspect.

Custom Golf Ball Fitting

In addition to coaches being able to custom fit golf clubs, the other important equipment variable is the golf ball. The last step from an equipment aspect to take a game to the next level is golf ball fitting. Golf balls are categorized by two different models based on the construction of the golf ball. The two piece golf ball consists of a large inner rubber core and a high performance urethane elastomer cover (Acushnet, 2011). The performance of the two-piece ball enhances distance with less emphasis on backspin and feel. The three piece golf ball has a soft inner core. The second piece that surrounds the inner core is made of high velocity rubber and the third piece is a high performance urethane elastomer cover. The benefit of the three piece ball compared to a two piece ball is the increased feel and spin control on golf shots hit onto greens. Bridgestone Golf Company fully expects all golfers to lower their scores when they go through their company's process to properly fit the correct golf ball to the golfers' swing (Bridgestone Golf, 2011). The process focuses on golf shots hit with a driver and using a launch monitor to determine which model of their ball is best for the golfer.

The Titleist Golf Company, which produces the number one selling golf ball in the world, agrees that golfers of all levels should be properly fit for a golf ball (Acushnet Company, 2011). However, Titleist's theory of golf ball fitting is different from that of the Bridgestone golf

Company. The focus on the Titleist system of golf ball fitting is on the short shots; chipping and putting, and not on full shots with drivers. Titleist feels that most scoring opportunities are created by shots to the green, not tee shots with a driver. Once players are fit for a ball that maximizes their short game ability, they are then custom fit for clubs that best match their swing and the characteristics of the ball that performed best for them (Acushnet Company, 2011).

Both the Bridgestone and Titleist systems of golf ball fitting have valid arguments for their approach to ball fitting. It really depends on the specific game and needs of the player being fit. If the player's tee shots are normally fairly straight and have the proper launch angle and spin rate, as determined by the fitting using a launch monitor, he or she may benefit more by a ball that performs better on and around the green. In this case the Titleist method would be the method of choice for fitting. If a player's launch angle and spin rate on tee shots is bad and results in short crooked tee shots that seldom hit the fairway the emphasis should be on this particular area of the player's game. In this case the Bridgestone method would be more suited to help the golfer improve his or her performance and score. In either of these cases the fitter would have a pretty good idea of the type of ball the individual should play after the initial player assessment and the basic club fitting session.

Being Physically Fit Enhances the Golfers Performance

According to research, there is support that a golf specific conditioning program is not only beneficial but necessary to increase the performance in amateur golfers (van der Ryst et al., 2010). These programs are designed to increase core strength as well as endurance. Even though the golf swing does not require a great deal of strength, it does require excellent muscle tone to help the body perform the wide range of movements in a golf swing (van der Ryst, 2010).

There are many methods of cardiovascular training; however, some of these methods are more effective in the general conditioning of the body of a golfer. The body uses two systems to create energy one is anaerobic (without oxygen) and one is aerobic (with oxygen). Golf specific exercise programs are most successful when you use a combination of aerobic and anaerobic exercise (Romatowski, 2006). Golf not only requires aerobic endurance but requires that muscles perform a lot of explosive movements (Harmon, 2010). Romatowski (2006) states the key is to choose an exercise activity that most resembles the golfing experience. It is important to use the specific muscles and the energy system that are required of golf in your exercise program. He suggests the best choices for an aerobic/anaerobic exercise program consists of hiking outdoors, alternating walking/jogging, and circuit training (Romatowski, 2006).

Flexibility and balance are also important to a good golf swing. Poor range of motion and inadequate torso flexibility limit not only the golf swing itself, but the golfers' ability to achieve optimal performance (Smith, 2010). Studies have shown that the number of swings taken by a competitive golfer either in competition or practice sessions requires enhanced muscular stability (Smith, 2010). "Strength, especially around the hips, pelvis and lower back are essential for optimal performance in golf" (Smith, 2010, p. 645). To have an effective golf swing the golfer must be in a position to execute an efficient repeatable movement at impact of the golf ball. This movement involves high velocity and requires exceptional balance, strength, and timing. In order to improve muscular stability a strengthening program of the body's core is essential. Another advantage of being physically strong and fit is in the area of injury prevention. "Studies show that 53% of amateur golfers and 30% of professional golfers have sustained an injury while playing golf and most of those injuries actually occurred while hitting balls on the course or practicing on the driving range" (Smart Body Golf, 2011, p. 38).

Increasing and maintaining flexibility is the most effective way to prevent injuries. Preventing injuries to the lower back, knees, ankles, wrists, and shoulder joints are all considerations necessary in devising a proper workout program. In addition to preventing injuries increased flexibility allows the golfer to make a bigger shoulder turn and generate club head speed (Smart Body Golf, 2011). Golf needs to be treated as a fitness activity. A golf fitness program has to have a component that focuses on developing speed in the muscle groups that are involved in the specific explosive movements of the golf swing. Developing the muscles to perform speed movements as well as overall core strength and flexibility are essential to perform at a higher level and avoid injury. It will also allow the golfer to practice as much as they want without pain or nagging injuries.

It has been proven to golfers of all levels that fitness is an important component to improving your golf performance (Cochran, 2009). Sean Cochran, one of the most recognized golf fitness instructors on the PGA Tour today, maintains that golf fitness is a year round commitment. He breaks down the training cycle into five phases:

- Phase One: Corrective, Strength, Stability, and Endurance Training
- Phase Two: Strength and Stability Training
- Phase Three: Power Training
- Phase Four: Golf Specific Training
- Phase Five: Competition/ Maintenance Training

Phase one, two, and three are considered to be out of season programs focusing on increasing strength, stability, and endurance. Phases four and five are designed for in season training and focus on maintaining strength and endurance.

A Proper Nutritional Program Can Positively Influence a Golfers' Performance

A golfers' pre-round nutritional intake can not only affect the way the body performs but also how the mind thinks (Wagner, 2009). Nutritionists state that a pre-round meal high in carbohydrates will help performance. The pre-round meal should also contain a moderate amount of protein and be low in fat. It is generally suggested that the pre round meal be eaten three hours prior to competition if possible (Wagner, 2009). A pre-round meal high in carbohydrates is important prior to the competitive round due to the fact that the body digests carbohydrates fast. This allows for the body to maximize the storing of glycogen. It is also important to eat a peanut butter sandwich, yogurt, or drink some chocolate milk immediately after the round. This is the time that muscles are most sensitive to insulin and is the optimal time for muscle repair (Wagner, 2009).

Hydration is also an important factor that needs to be taken into account prior to the round of golf (Smith, 2010). It is necessary to be properly hydrated prior to the round to avoid mental and physical fatigue. Research shows that a golfer that is well hydrated and has maintained proper nutritional intake during the round of golf will perform better (Smith, 2010). Dehydration and low energy can cause muscle fatigue and lead to a lack of focus. Poor decision making, impatience, and underestimating distances, are also factors common to golfers' that are dehydrated or inadequately nourished (Smith, 2010).

The American College of Sports Medicine (ACSM) found in one of their studies that hydration has a serious impact on both the athletes performance and their overall health ("NCAA", 2009). They recommend that athletes consume fluids throughout the day of competition as well as pre- and post-competition. ACSM concluded that fluids that contain carbohydrates and electrolytes are necessary to properly fuel the body and enhance re-hydration.

The study also showed that athletes should not consume fluids that contain caffeine or any other type of stimulant. This type of fluid does not re-hydrate or re-fuel the body and may negatively affect the athlete's performance ("NCAA", 2009). Dr. Ralf Jäger (2011) suggests that golfers follow very specific strategies for hydrating before, during, and after the round of golf. Golf is a more strenuous sport than the casual observer thinks, especially when the weather is hot and humid. As the body temperature rises during the round of golf it tries to cool itself down by perspiring (Jäger, 2011). The evaporation of sweat from the skin acts as a cooling mechanism. As the body sweats it loses water and electrolytes. This can cause a dip in performance. It also affects the body's ability to focus, concentrate, and stay alert. It can also lead to dizziness and irritability (Jäger, 2011). These signs show up with the loss of only 1% of your body mass. If the body mass loss is 3% due to dehydration muscle cramps, heat exhaustion and even heat stroke are possible.

Jäger (2011) recommends that golfers should drink sixteen fluid ounces of water, sports drink, or juice two to three hours before their tee off time, and another eight ounces about fifteen minutes before they tee off. During the round he feels golfers should consume six ounces of fluid every thirty minutes. Fluids that have carbohydrates and electrolytes are recommended. Any type of flavored water or Gatorade type sports drink that contain about 8% of carbohydrates and electrolytes are the best option, and will do the best job of keeping the golfer hydrated (Jäger, 2011). Ideally the temperature of the beverages consumed should be in the 50 degrees Fahrenheit range. Water is accepted as well, but beverages that contain caffeine or other stimulants should not be consumed. Beverages that contain caffeine actually tend to increase dehydration and reduce the body's ability to retain fluids. Carbonated beverages should be avoided due to the fact that they reduce the amount of fluids that can be consumed due to

stomach fullness. After the round it is very important to start the re-hydrating process (Jäger, 2011). The goal is to have the body back to normal and completely hydrated within two hours. Again drinks that contain carbohydrates and electrolytes are the best. Carbohydrates replenish energy, electrolytes speed up the rehydration process, and protein helps muscles recover. One of the best post round drinks is low-fat milk. Milk helps speed up the body's recovery process from physical exertion (Jäger, 2011). Milk also contains proteins, vitamins, minerals, lipids, and amino acids which all aid recovery.

A daily balanced nutritional plan should be adhered to consistently over time to provide the golfer the best possible results (Berardi, 2006). Consideration should be given to a daily nutritional plan starting with breakfast. It has been proven that a balanced breakfast affects blood sugar rates, and allows the body to keep energy balanced (Berardi, 2006). Intake of protein, good carbs, and good fats are all important and play a role in keeping the body nourished (Berardi, 2006). The length of time between the golfers' warm up for the round, to the completion of the round, in many cases may be five to six hours. This makes a well-planned nutrition and hydration program necessary.

The NCAA Sports Handbook stresses that athletic performance is greatly affected by nutritional intake. They recommend that all athletes follow a nutritional plan that includes the proper amounts of carbohydrates, protein, and fat. If a proper nutrition plan is followed the athlete will not need to consume any type of vitamin or mineral supplements. Following a prescribed nutritional plan will also assist the athlete in maintaining body weight and provide a consistent energy level ("NCAA", 2009).

Using the ADDIE Model to Effectively Develop a Training Program

There are multiple instructional design systems to use when a training program. All of them in one way or another have a process to analyze the problem, identify the causes of the problem, and come up with a solution to the problem (Rothwell & Kazanas, 2004). The ADDIE model (Analyze, Design, Develop, Implement, and Evaluate) is one of the most common and basic forms of a training tool used (Castagnolo, 2007). There are several versions of the ADDIE model in use today. The ADDIE model was designed to evaluate the learners' needs and ensure that learners' learn. Another characteristic of the ADDIE model is that it is flexible. If changes are necessary, they can be easily made due to the fact that each phase has its own form of continual feedback to identify problems and correct them as they go. The ADDIE model was developed for the United States Military to create training programs that were efficient and systematic (Castagnolo, 2007). The goal of the model is to ensure that learning not only happens, but that it occurs in a structured manner. The process begins with a needs assessment to determine the learner's needs. The process ends with a very comprehensive evaluation process to make sure the training was effective (Center on Disability and Employment, 2009).

Another factor of the ADDIE model is that adult learners tend to find this learning process useful and efficient. Adult learners generally have six common characteristics: needing to know why, what and how they will learn is one (Laird et al., 2003). Another characteristic of the adult learner is that their motivation to learn is internal, not external (Laird, et al., 2003). Adult training programs are most successful if the atmosphere is informal, relaxing, and trustful (Laird et al., 2003). Studies show that adult learners tend to forget much of what they see and hear. To store information in its long term memory banks, the human brain needs to analyze and

evaluate the information (Silberman & Auerbach, 1998). The retention rates for different forms or methods of instruction are:

- Lecture 5%
- Reading 10%
- Audiovisuals 20%
- Demonstrations 30%
- Discussion 50%
- Practice by doing 75%
- Teaching others 90%

High retention is achieved by making the human mind work. Using a combination of different methods of instruction will greatly increase the retention rate of the adult learner (Silberman & Auerbach, 1998).

During the analysis phase of ADDIE the type of training needed is identified. Determining the existing knowledge the learners have on the subject, if any is important. Also understanding the gap between what the learners know and what they need to know is necessary information that needs to be analyzed (Beckschi & Doty, 2000). Any essential additional information regarding the group or person to be trained is then gathered (Beckschi & Doty, 2000). Next any constraints or potential problems that are present or could arise are considered. Finally, defining the intended outcome or goal of the training is identified.

The design phase is where the actual training program materials are generated (Beckschi & Doty, 2000). Identifying what needs to be learned and how it will be taught are two very important functions of this phase. Methods of presentation to be used as well as topic content are decided during the design phase. Determining what resources are available and what resources

need to be obtained to achieve the desired outcome must be considered. It is also important to identify potential challenges that may impact the training process.

The development phase is where the creating and testing of the training material happens (Beckschi & Doty, 2000). This includes all audio, video, manuals, demonstration aids, and any other materials that will be used during the actual training process. The focus of the development process should not only be on the content of the program itself but on the importance of creating activities that complement the content, to help improve the learners' retention of the material. An evaluation of the training program should also be created at this point (Beckschi & Doty, 2000).

The implementation phase delivers the training content either by presentation, video, computer or whatever the chosen form of delivery. The product delivered should contain any revisions that were made along the way and be considered the final product (Beckschi & Doty, 2000). The trainers that have been selected to perform the training must be ready to deliver in the training. Also, confirmation that all the materials and resources that were designed and created for the training program are prepared and ready to go (Beckschi & Doty, 2000).

The final phase of the ADDIE model is the evaluation phase. This phase reviews the performance of the training program, the trainer, and the satisfaction of the trainees (Beckschi & Doty, 2000). Were the needs of the learners properly addressed in the design and development of the training program? Identify what worked well and what didn't work as well as planned during the implementation phase (Piskurich, Beckschi, & Hall, 2009). Did the learners benefit from the training? Was the trainer effective in his or her delivery of the training? What method did the learners use to evaluate the program, the trainer? How can you determine if the learners will apply their learning in the future (Piskurich, Beckschi, & Hall, 2009)?

Conclusion

Generally, any golfer that has the ability and skill to play golf at a collegiate level is a gifted and talented athlete. However, to separate themselves from their fellow competitors they are looking for any competitive advantage they can find. Custom golf equipment fitting, exercise and fitness programs, and following proper nutritional guidelines will help them gain a distinct advantage. The implementation by the college golfer of these programs will ensure increased performance.

Chapter III: Methodology

The role of a college golf coach in the past was to refine and improve the golf swings of their team. Being a good golf instructor and mentor to the athlete was the coach's main role. However, as the sport of golf became more competitive at all college division levels, coaches continually looked for ways to make their golfers better and their teams more competitive. Two areas to improving a golfer's performance are often overlooked. Custom golf equipment fitting and the importance of fitness and diet are very important aspects in allowing a golfer to reach their full potential.

This chapter will include information about the methods and procedures that will be used in custom fitting golf equipment. It will also include information about a fitness and nutrition plan that is golf specific and will help the golfer to perform at a higher level. Finally the ADDIE method of developing of a training program is reviewed.

Training for Custom Fitting of Golf Equipment

Due to the fact that there are two specific issues being addressed; custom golf equipment fitting and fitness/nutrition, different types of training methods are required. Custom equipment fitting required a very exact process to fit the golfer for equipment. The fitness/nutrition training was a recommended training program that will help the golfer get in better physical condition, as well as perform better during tournaments.

The custom golf club fitting training consisted of a very specific step-by-step process. This process will include the use of a handout or fitting guide, demonstrations, hands on instruction, and the use of available online videos. The complete fitting process is used to separately fit all golf clubs including: drivers, utility clubs, irons, and wedges.

The golf ball fitting process involves the golfer hitting short shots and putts. This determines the consistency and feel of the golf ball preferred by the golfer. A launch monitor is used to determine launch angle and spin rate of the golf ball. This determines which ball best fits the golfer's swing. Combining the data from these two procedures provides the information needed to recommend the type of golf ball to be used.

Data Required

The information used in preparing the custom golf equipment training came from various sources. Golf equipment company manuals, websites, and published brochures were one source. An interview with a certified club fitting technician from Titleist Golf Company was another. Golf journal articles and golf magazine articles that focus on golf club fitting were another source. Launch monitor and golf simulator websites and manuals were used to provide data and very technical information regarding ball flight characteristics.

Training for Nutrition and Fitness

The nutrition/fitness training consists of developing a workout program that focuses on golf specific muscle groups and aerobic training. The method used to provide this training relied heavily on demonstrations and hands-on training. The use of training cards and in some cases online videos were used. The fitness training takes place in a workout room or fitness area.

The nutrition plan was based on two components. The first, an overall recommended nutritional plan for the golfer to follow on a consistent basis to stay fit. The second part of the plan is specific to the golfer's tournament schedule. It provided recommendations for pre-round, during round, and post-round food and fluid intake.

Data Required

The fitness/nutrition information used in the training program came from several sources. The NCAA website, journal articles on fitness and nutrition, and interviews with a certified athletic trainer and a certified athletic dietician were conducted. Websites that deal with nutrition and diet were also used. Fitness related websites also provide valuable information regarding various muscle groups and aerobic conditioning.

Chapter IV: Results

This chapter discusses data that was collected and how it was used to design of a training program for university golf coaches. Specifically the two areas included in the training are the custom fitting of golf clubs and a fitness/training program. The data included information and feedback from current college Division III golf coaches. To develop the training programs, the ADDIE Model of training was used in the development process.

The data was collected during informal discussions and meetings with twenty NCAA Division III women's golf coaches over a two day period in conjunction with the DIII Classic. The DIII Classic is an invitational college golf tournament hosted by Carleton College and is held each September at the Jewel Golf Club in southern Minnesota. Of the twenty college coaches interviewed nineteen were from the Midwest (Illinois, Minnesota, Iowa, and Wisconsin) and one from California. Coaches were asked questions and engaged in open discussions regarding their specific golf programs. Several questions were asked if custom golf club fitting and fitness/nutritional training are currently available to their college golfers. If so, what type of training is used and if the training is sufficient or lacking in any way? The researcher took detailed notes about the findings from all twenty coaches.

Table 1

Survey to Division III College Golf Coaches at DIII Classic

Questions 1-3	No Knowledge	Little Knowledge	Extensive Knowledge
1. Do you have knowledge of custom golf club fitting?	18	0	2
2. Are you knowledgeable in golf specific fitness and exercise programs?	7	12	1
3. Are you familiar with the recommended nutritional requirements of competitive golfers?	9	7	4

Questions 4-6	Yes	No	No Opinion
4. Do you feel that custom golf club fitting will enhance your golfers' performance?	19	0	1
5. Do you feel that golf specific fitness and exercise programs will enhance your golfers' performance?	18	2	0
6. Do you feel that a proper nutrition program will enhance your golfers' performance?	15	3	2

From these meetings it was concluded that at the NCAA Division III level there is very little, if any effort put forward, and no formal training programs in place, to provide the college athlete with properly fit golf equipment and the essential fitness and nutritional knowledge to enhance golfers' performance. Of the 20 coaches interviewed two indicated they had extensive knowledge of custom golf club fitting, but didn't feel comfortable or capable of providing this service to their golfers. Of the 20 coaches 12 had some experience in fitness with their coaching background; however, only one has taken it a step further and actually studied golf specific fitness. Of the 20 coaches four felt they had extensive knowledge in nutritional plans for college golfers. While the other sixteen felt they had little to no knowledge in this area.

From these meetings and the information gathered, it was discovered that there was a need to provide college golf coaches, especially at the Division III level, training in the areas of custom golf club fitting, and golf specific nutrition and fitness. It was also necessary to educate the coaches on the importance of these areas and how their golfers' performance could be improved by implementing training in both custom golf club fitting and golf specific fitness and nutrition.

The model of choice to design a training program that fits the needs of college golf coaches is the ADDIE model (Analysis, Design, Development, Implementation, and Evaluation). The Analysis phase, which many feel is the most important phase, helps to develop a clear

understanding of the audience's needs and constraints. The target audience and the current knowledge level of the audience on the subject matter are also areas that are addressed at this stage. This information was gathered at the informal meetings and discussions during the DIII Classic.

The Design phase of ADDIE consists of the process of researching to develop the topic content to be used in the training program. The training methodology and materials needed for the training, as well as the look and design of the content were determined in the Design phase. The researcher has professional experience in custom fitting golf clubs and has studied golf specific fitness, exercise, and nutritional programs and has used this expertise to design the training program. This is also the phase where the structure and sequence to the steps of the training were identified to make the training delivery flow properly.

The Development phase of ADDIE is where the actual production of the training materials occurred. The delivery method that is the most efficient and effective was selected for implementation. Program materials, trainer guides, learner guides, and a complete list of what was required to perform the training were developed.

The Implementation phase of ADDIE puts the training plan developed into action. The learning environment is a very important component of the implementation phase. Everything needed for the delivery of the training should be in place and ready to go.

The evaluation phase should come shortly after delivery. This phase is a systematic process which considers feedback from the learners. The feedback obtained during this phase helps to determine what part of the training is working, or may not be working. The feedback also is instrumental in determining the effectiveness and quality of the delivery and of the trainer. Most important this phase finds out whether or not learning occurred. The purpose of this study

was to develop a training program that consists of custom club fitting, fitness and exercise programs, and nutritional recommendations for college golf coaches.

The training manual is not only a valuable resource for training but includes informative charts and diagrams that will aid both the trainer and the learner better understand custom golf club fitting, fitness, and nutrition. It will also help the learner understand the positive effect that these areas have on maximizing the learners ability to become a better college golfer. The training manual meets the expectations that were set forth in the methodology that included; sections on custom golf club fitting, golf specific fitness and exercise programs, and golf specific nutritional recommendations.

The first section on custom golf club fitting is a very comprehensive fitting program that provides the necessary knowledge for the trainer to properly fit the learner for custom golf equipment. It included individual sections on the following:

- Driver fitting
- Long Game fitting
- Iron fitting
- Wedge fitting
- Golf ball fitting

The second section highlighted two golf specific fitness programs. One focused on the “off season” when the golfer is not competing in competitions. This program focused on increasing strength, endurance, and flexibility. The “in season” program serves to maintain the strength, endurance, and flexibility gained through the “off season” program, and as an aid to prevent injuries.

The third section focused on recommendations for an overall “in season” nutritional plan. It provides specific information for nutrition and hydration during the three phases of a golf competition: pre-round, during- round, post-round. The ultimate goal of all three of these programs is to improve the overall performance of the college golfer. Appendix A contains the training program for golf equipment fitting, fitness and exercise, and nutritional recommendations.

Chapter V: Discussion

The development of a training program for college golf coaches to help increase their golfers' performance was the focus of this research project. The plan focused on three areas: custom golf club fitting, golf specific fitness and exercise programs, and a golf specific nutritional recommendation plan. The project was completed in four distinct phases. The phases were: research, information gathering, planning, and the actual designing of the training program.

Information was gathered from face-to-face and phone interviews with fitness trainers and athletic nutritionists. In addition, information regarding custom golf club fitting came from interviewing golf club experts with the Titleist Golf Company. Also information was obtained from a meeting with NCAA Division III golf coaches at the DIII Classic golf tournament in Minnesota. From this meeting the objectives and goals of the training program were determined and the training program was designed and created.

Limitations

The following were limitations of the study:

1. The interview process of NCAA golf coaches was limited to Division III, Division II coaches most likely have the same needs, but were not interviewed.
2. The sample size of coaches was small; 20 of 140 Division III coaches were interviewed.
3. The training plan for custom golf club fitting assumes that the trainer (coach) has some knowledge and understanding of golf clubs.
4. The training plan for custom golf club fitting assumes that the trainer (coach) has access to a golf club fitting system, including a launch monitor.

5. The training plan for custom golf club fitting assumes that the trainer (coach) uses high quality practice balls during the fitting process to insure accurate readings regarding launch angle and spin rate.

Recommendations and Future Direction

A golf club fitting and fitness/nutritional training program to aid college golf coaches in the development of their golfers is necessary to help college golfers become the best they can be. However, because of the nature of college athletics rules, and guidelines set forth by the NCAA this type of training program is optional and up to each individual college coach. The teams that engage in this type of training will at some point show improvement in individual and team scores. This will cause a snowball effect and give teams that are not providing this training the desire to do so which will help their golf programs stay competitive.

The data gathered from the twenty Division III coaches should be used to develop a survey that can be administer to the 150 NCAA Division III coaches. The focus of the survey would be to determine the degree to which the coaches have expertise in and the level which they provided custom golf club fitting and fitness/nutritional plans for their golfers.

An evaluation plan needs to be developed that evaluates the effectiveness of each section of the training program and its ability to increase the golfers' performance.

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THE COLLEGE GOLF COACHES GUIDE TO INCREASING PLAYER PERFORMANCE

INCLUDING:



GOLF EQUIPMENT FITTING



FITNESS & EXERCISE PROGRAMS



NUTRITIONAL RECOMMENDATIONS



INTRODUCTION

This training manual is designed to assist college golf coaches who do not have access to the expertise of a golf professional for club fitting, a fitness trainer, or a nutritional expert to provide the necessary information for their athletes to achieve their full potential. This manual will provide the basic knowledge needed to properly fit golfers with custom fit golf equipment. It will also provide golf fitness programs for “in” season and “off” season to increase the golfers’ strength and endurance and improve overall performance. The manual will also discuss nutrition and hydration plans for “in” season, pre-tournament, during tournament, and post-tournament that will allow the golfer to perform to the best of their ability.

This manual is divided into three sections. The first section on golf equipment fitting will provide step by step instructions on how to properly fit:

- ✓ Driver
- ✓ Long Game
- ✓ Irons
- ✓ Wedges
- ✓ Golf Balls

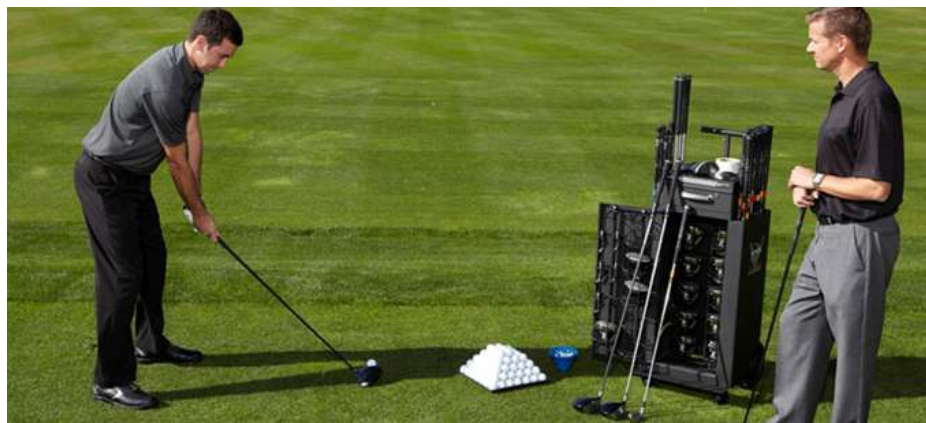
Section two highlights two specific fitness programs, one for “off” season training focusing on increasing strength, endurance, and flexibility. The “in” season program will be designed to maintain gains in strength, flexibility, and endurance that were acquired in the “off” season program, as well as serving as insurance to preventing injuries. Each program will give instructions and diagrams on how to perform the individual exercises.

Section three consists of recommendations for an overall “in” season nutritional diet. It will also examine the importance of nutrition and hydration during all three phases of the actual competition.

SECTION I: GOLF EQUIPMENT FITTING

INTRODUCTION

Section I of the fitting golf equipment provides a step-by-step process required to properly fit a golfer for their clubs (driver, long game, irons, and wedges). The training also allows for the fitting process to determine the proper golf ball for their game and individual swing characteristics. Both of these processes are extremely important and necessary for a golfer to play golf to the best of their ability. It also increases the player's confidence level in that they have equipment specifically fit for their golf swing.



<http://www.bing.com/images/search?q+=golf+club+fitting&view=detail&id=05419612E02AB5FE71CAA390F6F552A83C40D01F&first=91&FORM=IDFRIR>

PLAYER EVALUATION

Player evaluation is the first and one of the most important steps in the custom club fitting process. This is where the fitter gets to know the player and learn about the characteristics of their golf game. It serves as a starting point for the fitter and player to get to know each other and creates a feeling of trust between fitter and player. Basic information acquired by the fitter appears in the form below.

Name:
Contact Information:
Date of Fitting:

1. What is your current handicap or what is your average score?
2. Do you currently take golf lessons? Yes No
3. Do you have any physical conditions that affect your golf swing? Yes No
4. Do you practice regularly? Yes No
5. Do you have a fitness program? Yes No
6. How many rounds do you play per week?
7. Have you ever been professionally fit for golf clubs? Yes No
8. What is your most common ball flight with the driver?

Hook
Pull
Draw
Straight
Fade
Push
Slice

your driver?

10. What is your most common miss with the driver?

Too Low Too High Hook Slice Push Pull

11. How would you describe your driver launch?

Too Low Medium Too High

12. How would you describe your driver trajectory?

Falling Penetrating Rising

13. How would you describe your tempo?

Smooth Medium Quick

14. Where do you use your 3-wood more often?

Off the Tee Off the Turf

15. What is the strongest lofted iron in your current set?

2-iron 3-iron 4-iron 5-iron

16. What is the most common ball flight with your irons?

Hook Pull Draw Straight Fade Push Slice

17. What is the most common miss with your irons?

Hook Pull Draw Straight Fade Push Slice Thin Fat

18. What distance do you hit your wedges?

Pitch: Gap: Sand: Lob:

19. If you lay up on a par 5 what yardage are you most comfortable with for your 3rd shot?

Materials needed:

- Players current driver
- Completed Player Evaluation Form
- Custom fitting cart with demo clubs
- Launch monitor
- Hitting board
- Face tape
- Golf balls
- Practice range
- Golf tees

Step 1-Player Assessment: Review the player evaluation assessment form with the player. Ask them any addition key information about their game (example: What are they trying to achieve by getting custom hit clubs? Such as length, ball flight, etc.)

Step 2- Baseline Player Analysis: Have the player hit 3-5 golf balls off the golf tee with the players current driver using a launch monitor to determine ball speed (in miles per hour), launch angle (in degrees) and backspin (in revolutions per minute) and fill in the numbers on the top of Driver Fitting Worksheet located at the end of the driver fitting section. For an average golfer with ball speed of 150 mph the desired launch angle is 14° and the desired backspin is 2500 rpm. These conditions allow for the longest most penetrating golf shots. Table 1 shows the desired numbers for various swing speeds. Have the player hit 3 more golf balls to assess the visual observations of the flight of the golf ball and complete the Visual Observation portion of the Driver Fitting Worksheet.

Table 1:

Optimal Launch & Spin Rates in Relation to Ball Speed

Tempo	Ball Speed	Launch Angle	Backspin
Fast	170 mph	15°	2400 rpm
Average	150 mph	14°	2500 rpm
Slow	130 mph	12°	2600 rpm

Step 3- Fitting for Shaft Length: Apply face tape to face of the players current driver to determine the optimal length of shaft for the player. Have the player hit 3-5 golf balls to create markings on the face tape. Examine the face tape to determine the proper length that the shaft of the golf club should be. For example, if the markings on the face tape are on the toe of the club the club is too short, if the markers on the face tape are towards the heel of the club the club is too long, and if the markings on the face tape are in the center the club is the ideal length. Use Figure 1 below as a guideline. If the club is too long or short proceed by changing the length of the shaft in half inch increments using clubs from the fitting cart until the desired ideal length is found.

Figure 1:

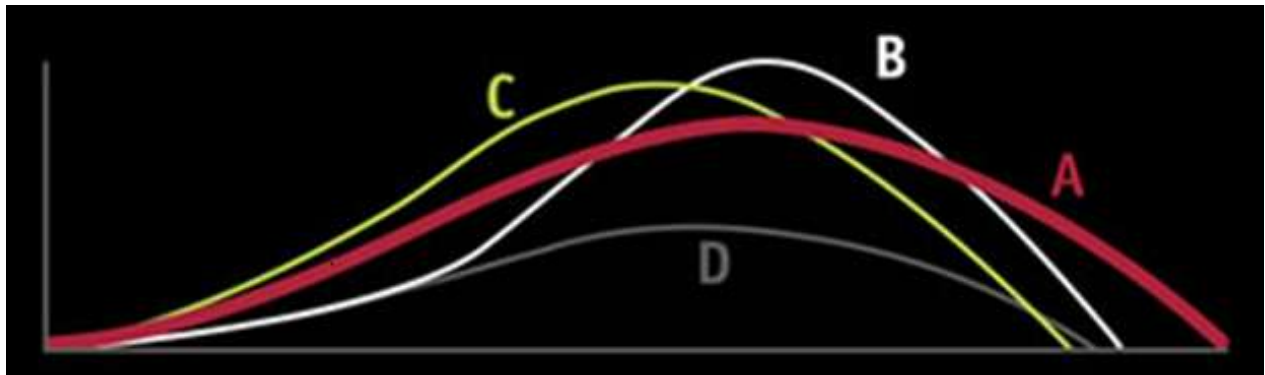


Acushnet, 2010, p. 11

Step 4- Fitting for Club Head ... by analyzing the results of the Visual Observations of the golf balls hit with the driver at this point a recommendation

on the driver model will be done. Refer to Figure 2 below to determine the recommended club head for the player.

Figure 2:



Ball Flight	Launch Angle	Spin Rate	Club Head Recommendations
A	High	Low	Large Head, Shallow Face
B	Low	High	Large Head, Shallow Face OR Small Head, Deep Face
C	High	High	Small Head, Deep Face
D	Low	Low	Large Head, Shallow Face

Step 5- Fitting for Shaft Flex and Weight: Using the visual observation of golf shots hit up to this point, select a shaft from the fitting cart with proper length (determined in step 3) and flex that will maximize the players performance. Shaft

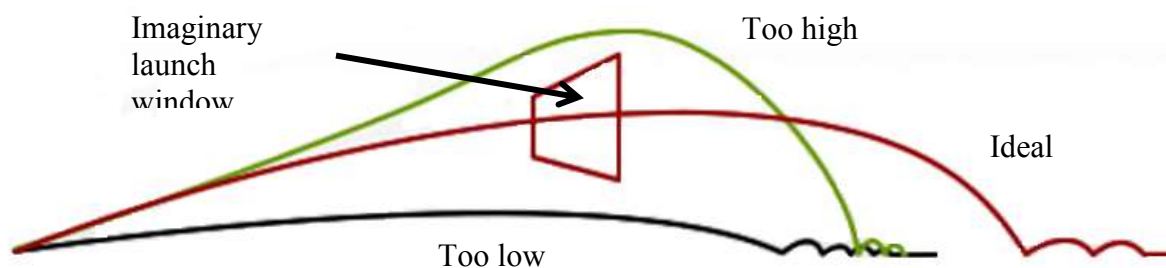
flex refers to the amount the shaft will bend as a result of how much force is applied. Determining the correct shaft requires the information gathered from the launch monitor in step 2 (ball speed and launch angle). Much of the shaft fitting is player dependent, but the following generalizations work for most golfers:

- Heavier shafts and firmer flexes for quicker tempo swings
- Lighter shafts and softer flexes for slower tempo swings
- Stiffer tipped shafts can reduce launch and spin
- Softer tipped shafts can increase launch and spin

For additional shaft fitting information see Figure 5.

Step 6- Fitting for Loft of Club Head: Recommending the proper loft of the head of the driver is determined by visual observation of ball flight and using data gathered from the launch monitor in step 2 regarding ball speed and launch angle. Select from the fitting cart a preferred club head model as determined in step 4 and the loft of their current driver. Have the player hit 6 golf balls to determine if an increase or decrease in loft is needed. Use Figures 3 and Table 2 below to help determine which loft is needed. Have the player hit an addition 6 golf balls for each new trial of loft change.

Figure 3:



Acushnet, 2010, p. 8

Table 5:

Driver Fitting-Cause and Effect Relationships

Changing This, Effects	Launch Angle	Backspin
More Loft	▲ Higher	▲ Higher
Less Loft	▼ Lower	▼ Lower
Stiffer Tip Shaft	▼ Lower	▼ Lower Backspin
Softer Tip Shaft	▲ Higher	▲ Higher Backspin
Stiffer Flex Shaft	Minimal Effect	▼ Lower Backspin
Softer Flex Shaft	Minimal Effect	▲ Higher Backspin
Heavier Weight Shaft	Minimal Effect	▼ Lower Backspin
Lighter Weight Shaft	Minimal Effect	▲ Higher Backspin

Step 7-Confirmation of Fitting: Have player hit 10-12 golf balls with the new fitted club that has been fit for length, club head model, shaft flex and weight, and loft. This step will confirm that the optimal conditions exist to hit the ball longer and straighter. Write the recommendations on the Driver Fitting Worksheet in the Club Recommendation section and give to the player.

Driver Fitting Worksheet:

Name:		Date:
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Baseline	Model	Loft	Shaft	Length	Ball Speed	Launch Angle	Backspin	Carry Yards	Total Yards

- 1. Rate driver control: Poor Average Excellent

- 2. Rate visual launch: Too Low Medium High Too High

- 3. Rate visual spin: Falling Penetrating Rising

Club Recommendations:

Model	Loft	Setting	Shaft	Length

LONG GAME FITTING

Materials needed:

- Players current fairway metals/hybrids/long irons(2 iron-5 iron)
- Completed Player Evaluation Form
- Custom fitting cart with demo clubs
- Launch monitor
- Hitting board
- Face tape
- Golf balls
- Practice range
- Golf tees

Step 1- Evaluation of Player's Current Long Game Set Make-up: Determine yardage distances player hits current long irons, hybrids, and fairway metals. Discuss gaps in yardages between each of the long game clubs. Test and observe the player's distance and trajectory with each of the long game clubs.

Step 2- Fit the Fairway 3-Metal: Based on launch conditions, trajectories, and ball flight data collected by the launch monitor, and visual observation, determine the fairway model and shaft that best fits the player. The length of the club will be determined by applying face tape on a standard length demo club to determine whether the club should be longer or shorter than standard. Use the Long Game Fitting Worksheet to record your results below.

Step 3- Determine the Player's Longest Iron That Produces a Playable Trajectory: Identify the player's longest playable iron taking into account ball flight, carry distance, and stopping ability. This step is completed through visual observation.

Step 4- Calculate the Yardage Gap between the Fairway 3-Metal & the Longest Playable Iron:

A determination will be made as to how many and what loft of hybrid clubs would be necessary to fill the gap between the 3-metal and the longest playable iron. Test different hybrid clubs to determine the various distances the player hits the clubs to correctly fill the long game gap. Use the Long Game Fitting Worksheet to record your results below.

Long Game Fitting Worksheet:

Name:		Date:	
--------------	--	--------------	--

Baseline	Model	Loft	Shaft	Length	Ball Speed	Launch Angle	Backspin	Carry Yards	Total Yards

1. Rate visual launch: Too Low Medium High Too High

2. Rate visual spin: Falling Penetrating Rising

Club Recommendations:

Model	Loft	Setting	Shaft	Length

IRON FITTING

Materials needed:

- Player's current 6 iron
- Completed Player Evaluation Form
- Custom fitting cart with demo clubs
- Launch monitor
- Hitting board
- Face tape
- Lie tape
- Golf balls
- Practice range

Step 1- Test Baseline or Current Launch Conditions with Player's Current 6 iron:

Observe the player's posture and ball flight to visually determine a starting point of the best club model for that player.

Step 2- Determine the Best Iron Model Available to Match the Player's Ability:

Iron model selection should be based on the player's consistency of contact, swing speed, trajectory, willingness to practice, and frequency of playing golf. This information will be based on visual observation and the completed Player Evaluation Form. The three model selections are perimeter weighted, cavity back, and blade. The perimeter weighted model is the most forgiving and the preferred selection of a higher handicapped golfer. The mid to low handicap golfer most often fits into the cavity back model. The blade model is designed to perform the best for extremely low handicap golfers to professional golfers.

Step 3- Determining the Proper Length Specifications of the Golf Club: Apply face tape to the face of a standard length 6 iron golf club. Have the player hit several golf balls off of a hitting board which will leave an impact mark on the face tape to determine whether the length should be shorter than standard or longer than standard. See figure below for examples of face tape. Based on the face tape markings have the player hit the recommended length 6 iron with face tape to insure the proper length has been determined.



Acushnet, 2010, p.32

Step 4- Determining the Proper Lie Angle of the Golf Club: Apply lie tape to the sole of a 6 iron with a standard lie angle of 62.5°. Have the player hit several golf balls off a hitting board which will leave an impact mark on the sole of the golf club. These marks will determine whether the club needs to be more upright or flat in lie. If the club is too upright missed shots will tend to go left. If the club is too flat missed shots will tend to go right. If the lie is ideal straighter shots should be the result. Based on the lie tape markings have the player hit a 6 iron with the recommended lie to insure that the proper lie angle was determined. See figure below for examples of lie tape.



Acushnet, 2010, p. 33

Step 5- Determining Ideal Launch Conditions with regard to Shaft Flex and Shaft

Type: Have the player hit several golf balls with the 6 iron, that has the correct length and lie specifications, using the launch monitor to determine ball speed. Visual observation is used to identify the players swing tempo and physical strength. The completed Player Evaluation Form provides information regarding the player's practice habits, and frequency of play which also have an impact on determining the proper shaft type and flex. The information gathered from this process will lead to a recommendation of the proper shaft flex and material for the player. At this point the player would hit golf balls with a 6 iron using a variety of shafts that fit the players characteristics to narrow it down to the best shaft for this player.

Step 6- Determining Golf Club Grip Size and Type: Proper golf club grip size produces less tension in the hands and fore arms and promotes the proper release of the hands during the golf swing. The proper size golf grip allows the players finger tips to slightly touch the palm in the players left hand (for a right handed golfer). A smaller grip helps promote a right to left ball flight a larger grip helps promote a left to right ball flight (for a right handed golfer). Have the player test various grip sizes and materials on the custom fitting cart to find their preferred grip model.

Iron Fitting Worksheet:

Name:		Date:	
--------------	--	--------------	--

Baseline	Model	Shaft	Length	Lie Angle	Grip Size	Grip Type

1. Rate visual launch: Too Low Medium High Too High

2. Rate visual spin: Falling Penetrating Rising

Club Recommendations:

Model	Shaft	Length	Lie Angle	Grip Size and Type

WEDGE FITTING

Materials needed:

- Player's current wedges
- Completed Player Evaluation Form
- Custom fitting cart with demo clubs
- Hitting board
- Lie/sole tape
- Golf balls
- Practice range

Step 1- Note the Player's Current Wedge Lofts and Bounce Angles: Apply lie and sole tape to the player's current wedge. Have the player hit full shots, half shots, and chip shots off a hitting board with their current wedges. This will determine if the lie of the club is too flat or upright similar to the iron fitting. The marks made on the sole tape will also determine whether the player is classified as a slider/sweeper and needs a wedge with less bounce and a narrower sole. Or if the player is a driver/digger and needs wedges with more bounce and a wider sole.



SLIDER/SWEEPER



DRIVER/DIGGER

Step 2- Fit for Highest Lofted Wedge and a Gap Wedge to Fill the Gap between Pitching Wedge and Highest Lofted Wedges: This process is achieved by hitting golf shots with a variety of wedges that have different lofts available in the fitting cart. Determination of the proper wedge set makeup is determined by the fitters recommendations and the players' personal preference.

Wedge Fitting Worksheet:

Name:		Date:
--------------	--	--------------

	Model	Shaft	Lie Angle	Degree of Bounce	Grip Type
Baseline					

Club Recommendations:

Model	Shaft	Lie Angle	Degree of Bounce	Grip Size and Type

BALL FITTING

Materials needed:

- Golf clubs
- Different models of golf balls
- Golf course

The purpose of golf ball fitting is to find a golf ball that best performs for each individual's golf swing. The goal in being properly fit for a golf ball is to lower the player's score. The best place to determine which golf ball is best for the player is on the golf course. Generally, there are two ways to fit for the proper golf ball. One method is fitting from tee to green focusing on the driver and the longer golf shots. The second method is conducted focusing from green to tee with an emphasis put on shorter "feel" shots around and on the green. Both of these methods have their advantages and disadvantages. In this training program the green to tee method will be used.

The characteristics of the model of the golf ball combined with each player's individual swing characteristics determine the proper golf ball fit for that player. A two piece golf ball which consists of a solid core and a cut proof durable cover provides the player the following benefits: extreme distance, low backspin and side spin, durability, and medium to soft feel at impact. The three piece golf ball which consists of a high velocity two piece core and a high performance urethane elastomer cover provides the golfer with exceptional distance, consistent ball flight, green side control, soft feel on all shots, and excellent durability.

Step 1- Begin by hitting several half swing or partial swing approach shots using two different models of golf balls. Record results on Ball Fitting Worksheet.













Step 2- Hit full shots with short irons ie pitching wedge, 9 iron using the two different models. Record the results.

Step 3- Hit full shots using a 5 or 6 iron with the two different models and record the results.

Step 4- Hit full shots using fairway metals and/or hybrids with the two different models and record the results.

Step 5- Hit tee shots with the driver using the two different models of golf balls and record the results.

Ball Fitting Worksheet

	<u>2- Piece Ball</u>	<u>3- Piece Ball</u>
Hit numerous shots using a half swing		
Hit shots using a full swing with a pitching wedge		
Hit shots using a full swing with a 5 iron		
Hit shots using a full swing with a hybrid/fairway metal		
Hit tee shots using a driver		
Any noticeable difference in feel?		
Recommended Ball	<input data-bbox="1003 1749 1265 1808" type="text"/>	

SECTION II: GOLF FITNESS PROGRAM

INTRODUCTION

Section II discusses the importance of the fitness of golfers', and how being fit can drastically improves overall performance. It also explains the significance of using an exercise program that combines aerobic and anaerobic exercise activities. The golf fitness program also focuses on flexibility and balance which are extremely important variables required to perform a good golf swing that is repeatable. The prevention of injury is also another positive that comes from participating in a fitness program. This not only allows the golfer to perform better but allows them to practice as much as they wish to.



<http://www.bing.com/images/search?q=girl+lifting+weights&view=detail&id=144BE56E900EBC1BF69BF518583E4100B4BD2569&first=31&FORM=IDFRIR>



<http://www.bing.com/images/search?q=girl+running+on+treadmill&view=detail&id=D9DCE48FA04720846EDAF41434F7E34C1AA73590&first=0&FORM=IDFRIR>

“OFF” SEASON FITNESS PROGRAM

The off season program is designed to improve the golfers' overall strength, stability, and endurance. The length and intensity of the off season program is much greater than that of the in season plan. Flexibility and balance are also important considerations of the off season program. This program also is important to conditioning the body to help prevent injuries. The off season fitness program consist of the following:

Conditioning Program: There are a variety of different conditioning programs available to improve strength and endurance for golfers. Below are six different routines for the “off” season program. Each week the golfer should do a conditioning program a minimum of three times per week. Be sure to choose speeds that are challenging and gradually increase speeds as you complete the programs to increase difficulty.

PROGRAM 1: Sprints (8 minutes)

- Can be completed on a treadmill or a track. If using a treadmill choose a speed that you can maintain for 20 seconds during 16 intervals
- During the rest period either dismount the treadmill or stop running on the track
- Continue at the same speed until all intervals are completed

Follow the instructions below for program 1:

- *Warm-up: Jog for 5 minutes at 60% effort*
- *Interval 1-16: Sprint 20 seconds: Rest 10 seconds*
- *Cool down: Walk for 3 minutes*

PROGRAM 2: Sprints on incline (14 minutes)

- Must be completed on a treadmill. Choose a speed that you can maintain for 30 seconds while on an incline 6.0 on a treadmill
- During rest dismount the treadmill
- Continue at the same speed until all intervals are completed

Follow the instructions below for program 2:

- *Warm-up: Jog for 5 minutes at 60% effort*
- *Interval 1-14: Sprint 30 seconds: Rest 30 seconds*
- *Cool down: Walk for 3 minutes*

PROGRAM 3: Alternate spring/jog (25:30 minutes)

- Must be completed on the treadmill. Choose one speed for the entire program where you can maintain a 30 second intervals, 60 second intervals, and a 3 minute interval.
- Continue at the same speed until all intervals are completed.

Follow the instructions below for program 3:

- *Warm-up: Jog for 5 minutes at 60% effort*
- *Intervals 1-7: Sprint 30 seconds: Jog 60 seconds at 5.5 speed on treadmill*
- *Intervals 8-11: Sprint 60 seconds: Jog 2 minutes at 5.5 speed on treadmill*
- *Interval 12: Sprint 3 minutes....then DONE!*
- *Cool down: Walk for 3 minutes*

PROGRAM 4: Alternate spring/jog/walk (Time varies)

- This program should be completed on a track but can also be done on a treadmill

Follow the instructions below for program 4:

- *Warm-up: Jog for 5 minutes at 60% effort*
- *Begin at the front straight away on the track (Start with a clean program on the treadmill): Sprint the front straight away (100 meters)*
- *After 100 meters beginning jogging: You choose your desired pace that is right for you. Keep it challenging. Jog the next 200 meters till the back straight away. (Roughly 1/8th of a mile on the treadmill)*
- *Once you hit the last 100 meters on a track transition to a walk: This is your rest period. Walk the 100 meters till you return back to where you started. This is one repetition.*
- Complete a minimum of 6 repetitions, increase the number of repetitions and pace of jog/walk the more times you complete this program.

PROGRAM 5: Fast walk with incline (34 minutes)

- Use a treadmill to complete this program. Choose a walking pace that is as fast as you can walk without having to break into a jog (usually between 3.5-4.5)
- Stay at the same speed throughout the program.

Follow the instructions below for program 5:

- *Warm-up: Walk 2 minutes at 3.0 speed*
- *Interval 1: Increase incline to 3% until 4 minute mark*
- *Interval 2: Increase incline to 5% until 6 minute mark*
- *Interval 3: Increase incline to 9% until 8 minute mark*

- *Interval 4:* Increase incline to 13% until 10 minute mark
- *Interval 5:* Increase incline to 17% until 12 minute mark
- *Interval 6:* Increase incline to 21% until 14 minute mark
- *Interval 7:* Increase incline to 25% until 16 minute mark
- *Interval 8:* Decrease incline to 21% until 18 minute mark
- *Interval 9:* Decrease incline to 17% until 20 minute mark
- *Interval 10:* Decrease incline to 13% until 22 minute mark
- *Interval 11:* Increase incline to 25% until 24 minute mark
- *Interval 12:* Decrease incline to 21% until 26 minute mark
- *Interval 13:* Decrease incline to 13% until 28 minute mark
- *Interval 14:* Decrease incline to 9% until 30 minute mark
- *Interval 15:* Decrease incline to 3% until 32 minute mark
- *Cool down:* Walk 2 minutes at 0% incline

PROGRAM 6: Walk with incline (30 minutes)

- Use a treadmill to complete this program

Follow the instructions below for program 6:

- *Interval 1:* 3 minutes at 3.0 speed, 0% incline
- *Interval 2:* 3 minutes at 3.0 speed, 4% incline
- *Interval 3:* 3 minutes at 3.5 speed, 8% incline
- *Interval 4:* 3 minutes at 3.0 speed, 12% incline
- *Interval 5:* 3 minutes at 3.0 speed, 15% incline
- *Interval 6:* 3 minutes at 3.5 speed, 12% incline
- *Interval 7:* 3 minutes at 3.0 speed, 12% incline
- *Interval 8:* 3 minutes at 3.0 speed, 12% incline
- *Interval 9:* 6 minutes at 3.5 speed, 10% incline
- *Cool down:* at 3.0 speed

Weight Training Program: This program is designed to be completed in 45 minutes to 60 minutes.

Stretch Routine for flexibility: Complete routine twice

Kneeling Heel-to-Glute	30 seconds/each side
Elbow to Instep	5 times each side
90/90 Rotation	5 times each side
Box Hamstring	30 seconds/each leg
Split-stance kneeling	30 seconds/each side

Kneeling Heel-to-Glute: Get onto one knee in a kneeling position. Lift bottom leg up and grab foot. Make sure that your knee is behind your hip in the bottom position. Hold for 30 seconds and then switch sides.



http://www.fix-knee-pain.com/blog/wp-content/uploads/2012/03/quad_stretch_kneeling.jpg

Elbow to Instep: Be sure to keep the back leg straight. Try to drop your forearm down to the instep of your foot. Keep your chest up.



http://media.coreperformance.com/images/411*308/Forward+Lunge+Elbow+to+Instep.png

90/90 Rotation: Flex legs and hips into 90 degree angles. Extend arms out straight and in one fluid motion bring the top arm towards the floor. Allow for the head to follow the hand. Make this a smooth and flowing motion.



<http://www.womenshealthmag.com/files/images/wm-0809-90-90.small%20preview.jpg>

Box Hamstring: Place heel of foot on an elevated surface such as a box or a bench. Keep the leg straight and reach down to your toes. Hold.



http://bhcmt.com/wp-content/uploads/2011/09/0604_new_rules_hamstrings_2.jpg

Split-stance kneeling stretch: Kneeling side knee should be outside of the hips. Stretch should be felt on inner groin of kneeling leg.



http://www.xfactorfitnessolutions.com/blog/wp-content/uploads/2010/09/IMG_0010.jpg

Weight lifting routine for strength and injury prevention:

	<u>Sets</u>	<u>Repetitions</u>
Lower Body:		
DB Lunges	3	8 each leg
DB Step Ups	3	10 each leg
DB SL Squat	2	10 each leg
Upper Body:		
3 Point DB Row	2	10 each arm
DB Incline Press	2	10 each arm
Pushups	2	20
Core:		
Medicine Ball Throws		
Overhead	2	10
Shot Put	2	5 each side
Front Plank	2	45 seconds
Swiss Ball Pikes	2	25
Pillar Bridge Rotations	2	5

DB: Dumb bell SL: Single Leg

Lower Body:

DB Lunges: Start in a standing position. Select a weight of dumb bells that is comfortable. Hold one in each hand by your side. Step out one leg at a time, lower your body, keeping your chest up, until your opposite knee is an inch above the ground. Push off your heel to return to standing position. Repeat with the other leg.



http://www.fullfitness.net/sites/default/files/dumbbell_lunge.jpg?1248286808

DB Step Ups: Start in a standing position holding the dumb bells by your side. Have a stable box, bench or stair that is 15-18 inches high. The higher the box, the more difficult the exercise. Step one leg up on the box, drive through the heel that is on the box to lift the other leg up

in the air. Raise other leg up in the air till it is waist high parallel with the ground. Slowly lower raised leg back to the ground and step other leg off the box returning to the starting position. Repeat with the the other leg.



<http://liveliving.files.wordpress.com/2009/09/step-ups.jpg?w=199&h=300>

DB Single Leg Squat: Put one foot back on a box or bench stepping the other leg out from the bench until you feel a slight stretch. Slowly lower your body to the ground until the back knee is just above the ground. Be sure to keep your chest up and back straight. Then drive through your heel to return to starting position. Repeat with the other leg.



http://stack.eastbay.com/Content/Site012/Articles/03_01_2009/SLsquatjpg_00000007813.jpg

Upper Body:

3 Point DB Row: Kneel with your right knee on a bench keeping your back parallel to the ground and placing your right hand on the bench in line with your knee. Hold the dumb bell in your left hand and hang it straight down by your side. Lift the dumb bell straight up till your elbow hinges to a 90 degree angle. Slowly lower the dumb bell back to the starting position. Repeat with opposite side.



<http://www.myhousecallmd.com/wp-content/uploads/2011/02/Single-Arm-Dumbbell-Row.jpg>

DB Incline Press: Sit on an inclined bench laying your back down flat. Start by holding the dumb bells out at a 90 degree angle. Press the dumb bells up straightening your arms until your elbows lock. Slowly lower your arms back to starting position. Repeat.



http://www.womenshealthsa.co.za/files/womenshealth/imagecache/content_preview/node-files/%5Buid%5D/workout/steps/0604_inc_dbell_bench.jpg

Pushups: Start in a plank position with your toes pointed down and your hands shoulder width apart. Keep your core tight and slowly lower your body until you are just above the ground and your elbows are hinged to 90 degrees, be sure to keep your back straight. Push up from your palms until you return to the starting position. Repeat.



http://fitnessanddefense.com/wp-content/uploads/2011/03/classic-push-up_push-up-variations.jpg

Core:

Medicine Ball Throws (Overhead): Take a medicine ball (8-20lbs) holding it straight above your head. Throw it using two hands at a cement wall and step your right foot forward as you throw the ball forward. Be sure to alternate stepping legs. Be sure to be keep your core tight as you throw.



http://2.bp.blogspot.com/_cjMnFvltPQw/SgrgF542mKI/AAAAAAAAAUQ/13OnX-as-Dw/s320/DSC_0751.jpg

Medicine Ball Throws (Shot put): Take a medicine ball (8-20lbs) holding it at hip level on your right side standing perpendicular (left side closest to the wall) to a cement wall. Have your weight on the back right leg. Keep your core tight and use mainly your core muscles to turn your body, transferring your weight to your left side and throwing the ball at the wall. Your body should now be facing the wall. Repeat with the opposite side.



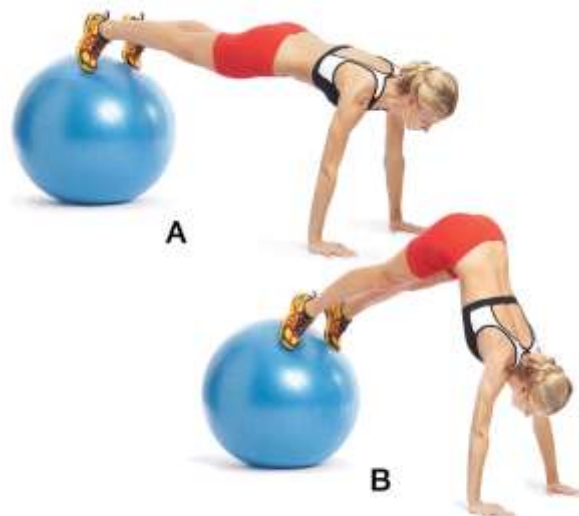
http://4.bp.blogspot.com/_cLbr1ziwRS4/SOxpJn2nx1I/AAAAAAAAAic/84e1wrg87ts/s320/Medicine+ball+rotational+throw.jpg

Front Plank: Start in the plank position with your toes perpendicular to the ground as close together as you can have your feet (the further apart your feet the easier the exercise) and your weight on your forearms flat on the ground. Be sure to have your back completely straight and hold your core in tight. Hold position for 45 seconds making sure you don't allow your hips to lower and maintain a straight back. Slowly lower body to the ground after you reach desired time.



<http://proteinsindia.com/wp-content/uploads/2011/09/Basic-Plank-for-burning-fat-and-Ab-workout.jpg>

Swiss Ball Pikes: Start by putting your hands on the ground shoulder width apart and putting your toes on the top of the swiss ball. Be sure to find your balance before you start this exercise. Once you are stable with your toes roll the swiss ball toward your chest keep your back and legs straight. Hold for one second and slowly roll the ball back to the original position. Repeat.



<http://www.womenshealthmag.com/files/images/0909-swiss-ball-pike-pushup.jpg>

Pillar Bridge Rotations: Start in the front plank position. Once you are stable slowly lift one arm till it is extended straight parallel to the ground, hold for one second. Bring the arm back to the original plank position and repeat with opposite arm. Then bring your arms back to original position and slowly lift one leg at a time and hold for one

second. Repeat with opposite leg. Lifting both legs and both arms is one repetition.



<http://proteinsindia.com/wp-content/uploads/2011/09/Basic-Plank-for-burning-fat-and-Ab-workout.jpg>

“IN” SEASON FITNESS PROGRAM

The “in” season fitness program is designed to help maintain the golfers’ overall strength, stability and endurance that was gained during the off season program. This program, which is much shorter in length, is centered on the golfers’ endurance and flexibility, and not designed to build additional strength.

Conditioning Program: Below are 5 different types of conditioning programs that can be an option during the “in” season program. These routines are created to maintain endurance and provide a short effective cardio workout without producing muscle tightness or soreness.

PROGRAM 1: Short interval Run/Walk (33 minutes)

- Use a treadmill to complete this program

Follow the instructions below for program 1:

- Warm-up: Walk at 4.0 for 2 minutes
- *Interval 1:* 1 minute at 3.5 speed
- *Interval 2:* 3 minutes at 5.0 speed
- *Interval 3:* 1 minute at 7.0 speed
- *Interval 4:* 1 minute at 3.5 speed
- *Interval 5:* 3 minutes at 5.5 speed
- *Interval 6:* 1 minute at 7.5 speed
- *Interval 7:* 1 minute at 3.5 speed
- *Interval 8:* 3 minutes at 5.5 speed
- *Interval 9:* 30 seconds at 3.5 speed
- *Interval 10:* 2 minutes at 5.5 speed
- *Interval 11:* 30 seconds at 8.0 speed
- *Interval 12:* 2 minutes at 3.5 speed
- *Interval 13:* 4 minutes at 5.5 speed
- *Interval 14:* 2 minutes at 7.0 speed
- *Interval 15:* 30 seconds at 3.5 speed
- *Interval 16:* 2 minutes at 6.0 speed
- *Interval 17:* 30 seconds at 8.0 speed
- *Cool down:* 3 minutes at 3.0 speed

PROGRAM 2: Jog/Walk Difficult (37 minutes)

- Use a treadmill to complete this program

Follow the instructions below for program 2:

- *Warm up:* Walk at 4.0 speed for 2 minutes
- *Interval 1:* 5 minutes at 5.0 speed
- *Interval 2:* 1 minute at 3.5 speed
- *Interval 3:* 5 minutes at 5.5 speed
- *Interval 4:* 1 minute at 3.5 speed
- *Interval 5:* 5 minutes at 6.0 speed
- *Interval 6:* 1 minute at 3.5 speed
- *Interval 7:* 5 minutes at 6.5 speed
- *Interval 8:* 1 minute at 3.0 speed
- *Interval 9:* 5 minutes at 6.5+ speed
- *Interval 10:* 1 minute at 5.0 speed
- *Interval 11:* 2 minutes at 3.5 speed
- *Cool down:* 3 minutes at 3.0 speed

PROGRAM 3: Jog/Walk Intermediate (26 minutes)

- Use a treadmill to complete this program

Follow the instructions below for program 3:

- *Warm up:* Walk at 4.0 speed for 2 minutes
- *Interval 1:* 4 minutes at 5.0 speed
- *Interval 2:* 1 minute at 3.0 speed
- *Interval 3:* 4 minutes at 5.5 speed
- *Interval 4:* 1 minutes at 3.0 speed
- *Interval 5:* 4 minutes at 6.0 speed
- *Interval 6:* 1 minute at 3.0 speed
- *Interval 7:* 4 minutes at 6.5 speed
- *Interval 8:* 2 minutes at 3.0 speed
- *Cool down:* 3 minutes at 3.0 speed

PROGRAM 4: Jog/Walk Beginner (23 minutes)

- Use a treadmill to complete this program

Follow the instructions below for program 4:

- *Warm up:* Walk at 4.0 speed for 2 minutes
- *Interval 1:* 2 minutes at 3.5 speed
- *Interval 2:* 2 minutes at 5.0 speed
- *Interval 3:* 2 minutes at 3.5 speed
- *Interval 4:* 3 minutes at 5.5 speed
- *Interval 5:* 2 minutes at 3.5 speed
- *Interval 6:* 1 minute at 6.0 speed
- *Interval 7:* 3 minutes at 4.0 speed
- *Interval 8:* 1 minute at 5.5 speed
- *Interval 9:* 2 minutes at 3.5 speed
- *Cool down:* 3 minutes at 3.0 speed

PROGRAM 5: Walking Routine (26 minutes)

- Use a treadmill to complete this program

Follow the instructions below for program 5:

- *Warm up:* Walk at 4.0 speed for 2 minutes
- *Interval 1:* 1 minutes at 3.0 speed
- *Interval 2:* 3 minutes at 3.5 speed
- *Interval 3:* 5 minutes at 4.0 speed
- *Interval 4:* 2 minutes at 3.5 speed
- *Interval 5:* 3 minutes at 4.2 speed
- *Interval 6:* 1 minutes at 3.0 speed
- *Interval 7:* 3 minutes at 4.0 speed
- *Interval 8:* 3 minutes at 3.5 speed
- *Cool down:* Walk at 3.0 speed for 3 minutes



<http://www.bing.com/images/search?q=person+running+on+a+treadmill&view=detail&id=51A8BC4B15D0C3B21AABB82B6CF FBB9CD9EC8BF5&first=0&FORM=IDFRIR>

Weight Training Program: This program should take roughly 20 minutes and is focused on stretching and maintaining strength. The weight training program should be completed 2 to 3 times per week.

Exercise	Repetitions	Sets
Kneeling Heel-to-Glute	30 seconds each side	2
Elbow to Instep	5 times each side	2
90/90 Rotations	5 times each side	1
Box Hamstring	30 seconds each leg	2
Split Stance Kneeling	30 seconds each side	1
Wall Lat Stretch	30 seconds each side	2
Body weight squats	10	3
SL Glut Bridge w/ hip lift	10 each leg	2
SL Deadlift	10 each leg	2

SL: Single Leg

Kneeling Heel-to-Glute: Get onto one knee in a kneeling position. Lift bottom leg up and grab foot. Make sure that your knee is behind your hip in the bottom position. Hold for 30 seconds and then switch sides.



http://www.fix-knee-pain.com/blog/wp-content/uploads/2012/03/quad_stretch_kneeling.jpg

Elbow to Instep: Be sure to keep the back leg straight. Try to drop your forearm down to the instep of your foot. Keep your chest up.



http://media.coreperformance.com/images/411*308/Forward+Lunge+Elbow+to+Instep.jpg

90/90 Rotation: Flex legs and hips into 90 degree angles. Extend arms out straight and in one fluid motion bring the top arm towards the floor. Allow for the head to follow the hand. Make this a smooth and flowing motion.



<http://www.womenshealthmag.com/files/images/wm-0809-90-90.small%20preview.jpg>

Box Hamstring: Place heel of foot on an elevated surface such as a box or a bench. Keep the leg straight and reach down to your toes. Hold.



http://bhcmt.com/wp-content/uploads/2011/09/0604_new_rules_hamstrings_2.jpg

Split-stance kneeling stretch: Kneeling side knee should be outside of the hips. Stretch should be felt on inner groin of kneeling leg.



http://www.xfactorfitnessolutions.com/blog/wp-content/uploads/2010/09/IMG_0010.jpg

Wall Lat Stretch: Place one arm above head on a wall. Step away from the wall and bend your back to a 45 degree angle. You should feel this stretching around your shoulder and shoulder blade. Take opposite arm to reach under and stabilize the scapula against the rib cage.



<http://www.bing.com/images/search?q=wall+lat+stretch&view=detail&id=816308EC45B056C3D4D16329C39394D08B6DA37D&first=0&FORM=IDFRIR>

Bodyweight Squats: Stand with the feet parallel and about shoulder width apart. Place your hands on your head. Lower the buttocks until the thigh is parallel to the floor, pause and return to starting position. Do not allow the shoulder to drop forward. Remain in a position with the shoulders back and chest up throughout the move. Pick a spot to look at in the distance that will help keep the head up.



<http://www.bing.com/images/search?q=bodyweight+squats&view=detail&id=E1BCC1FBFF420CF74BC84A9A236DAE98F94A7439&first=0&FORM=IDFRIR>

Single Leg Glut Bridge with Hip Lift: Start by lying on your back, your feet flat on the ground with your knees up in the air. Lift your right leg straight up in the air. With your glut and abdominal muscles lift your hips of the ground. Hold for 2 seconds and slowly lower back to the ground. Repeat 10 times then switch to opposite leg.



<http://www.bing.com/images/search?q=single+leg+glute+bridge+with+hip+lift&view=detail&id=5E0432C606A69CAF9A696496AF23FA5CB344E706&first=31&FORM=IDFRIR>

Single Leg Deadlift: This exercise can be done with or without weights. But while “in” season be sure to use light weights. Start by standing on one leg keeping your back straight. Slowly start to lower from the hips keep your back straight and the lifting the leg that is off the ground back and up, be sure to keep it as straight as possible. Once your back and the lifted leg are parallel with the ground slowly return to starting position.



<http://www.bing.com/images/search?q=single+leg+deadlift+&view=detail&id=656321411CCEF39BE0E5A75BD48EA4D40D853670&first=0&FORM=IDFRIR>

SECTION III: GOLF NUTRITION & HYDRATION RECOMMENDATIONS

INTRODUCTION

Section III outlines proper nutritional programs that can positively influence a golfer's performance. The focus is on "in" season nutritional recommendations. The recommendations are divided into pre-competition, during competition, post-competition, and a nutritional plan tailored to the needs of a golfer that is "in" season but not competing. Hydration is also a very important factor that needs to be taken into account especially before, during, and after a competitive round of golf.



<http://www.bing.com/images/search?q=food+pyramid&view=detail&id=162B5855DC2D909F854F0732A80A67ECF954DF45&first=0&FORM=IDFRIR>



<http://www.bing.com/images/search?q=tiger+woods+drinking+gatorade&view=detail&id=ED683212DB0AAF9F83A41AAA913FEC7361D8F852&first=0&FORM=IDFRIR>

“IN” SEASON RECOMMENDATIONS

Healthy eating is a very important component to all athletes throughout the year. The following nutritional recommendations will help the golfer be more successful in their fitness and exercise programs and their overall performance on the golf course.

- Eat mostly real, whole, unprocessed food
 - If it comes from a box or a plastic wrapper, most likely it isn't real healthy for you
- Eat food as close to its natural state as possible
- Eat every 3-4 hours or 4-6 times each day
 - This prevent over eating at meals
- Every meal and snack should contain some form of protein
 - Protein helps build muscle and improve recovery after exercise
- Try to eat one serving of fruits or vegetables with each meal
 - High in vitamins, minerals, and antioxidants that increase good health
 - Examples: Green beans, peas, baked potato, grapes, strawberries, peaches, plums (1/2 Cup is typically a serving)

- Eat healthy fat such as monounsaturated and polyunsaturated fats which are good for your heart, cholesterol and your overall health
 - Fat is essential and necessary for hormone production
 - Examples: Avocados, peanut butter, nuts, seeds, and fish
- Drink mainly single ingredient , low calorie beverages
 - Best choice is water, tea, black coffee and fresh juice
- Be sure carbohydrate intake comes from a high quality source which provide good amounts of antioxidants and do not cause spikes in blood sugar.
 - Quality is more important than quantity
 - Examples: Whole grain cereal, whole grain bread, granola, brown rice, and vegetables
- Only use supplements when appropriate
 - Be sure to check with athletic trainer for NCAA approved supplements
- Allow yourself to live a little
 - Breaking the rules once in a while is fine just try not to do it too often
- Eat slowly and stop eating when you are 80% full
- Eat starchy carbohydrates after you exercise such as potatoes, cereal, bagel, and breads.

PRE-ROUND RECOMMENDATIONS

These recommendations are based on a morning tee off of the competition. Different choices can be made for different start times, however, stay with similar nutritional values.

- ❖ Pre-event meals should be eaten three to four hours before competition
- ❖ Should contain a large amount of carbohydrates
- ❖ This meal should also contain $\frac{1}{4}$ of your total caloric need for the day (this may vary from athlete to athlete)
- ❖ This meal should also include adequate fluids 16-24 oz to ensure hydration before the round

Examples of pre-round meal:

- Glass of juice
- Serving of fruit or low-fat yogurt
- Oatmeal or bagel with peanut butter
- Eggs or low-fat meat (ham or turkey sausage)
- Skim milk

DURING ROUND RECOMMENDATIONS

Due to the fact that a typical competitive round of golf in college can last anywhere between 4.5-6 hours it is necessary to keep the body fueled with small amounts of carbohydrates which will help maintain intensity, reduce muscle fatigue and cramping, and maintain mental focus.

- ❖ Maintaining hydration is extremely important
 - 8-12 oz of sport drink or diluted juice should be consumed every hour (more depending on extremely warm weather)

- ❖ Every 40 minutes to 1 hour eat a snack
 - Some suggestions: nuts and seeds, dried fruits, granola bars, energy bars, wheat crackers, fresh fruit, peanut butter sandwiches, dry cereal, etc.

- ❖ It is important not to get to the point where the body feels thirsty or hungry which generally indicates that the body is slightly dehydrated or undernourished. This leads to a decrease in performance. To reverse this effect it takes time which also can cause a negative effect on performance.

- ❖ It is key not to consume soda, or full strength juice because the body quickly absorbs it. This can lead to an upset stomach or a sugar rush which can lead to a decrease in performance. Also, soda dehydrates the body due to the caffeine.
- ❖ Avoid candy bars or high sugar based snacks which provide an uneven energy source that will not allow you to maintain strength and focus throughout the round.



<http://www.bing.com/images/search?q=healthy+snacks&view=detail&id=1CEBA7B638FFBD4F676AE7FC002E9F61C7241A08&first=0&FORM=IDFRIR>

POST-ROUND

It is extremely important to rehydrate the body and provide fuel for the body to recover within 45 minutes of completion of the competition. Waiting longer than 45 minutes to ingest food will significantly affect the replenishment of muscle, glycogen, and protein.

- ❖ The best sources to refuel and rehydrate the body are sports drinks with a 4:1 carbohydrate to protein ratio.
- ❖ Peanut butter or honey sandwich on wheat bread
- ❖ Yogurt
- ❖ Chocolate Milk

These snacks would be considered a fuel source which provides your muscles with glycogen which is necessary to provide fuel and aid in the rebuilding process of muscle fiber.