

Using Selective Attention Cues to Reduce Anxiety in Baseball Skill Development

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Integrative Project for Master's Degree in Psychology

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Chapter 1 - Introduction

While the game of baseball has stood the test of time in American culture, one thing has remained the same. Hitting a round ball with a round bat is no easier today than it was back in the game's infancy. Skill development tests even the most advanced of players as they work to stay on top of their game. The act of swinging a bat and hitting a ball is difficult and causes even the greatest of athletes to doubt their abilities.

Once physiological change occurs, such as increased heart rate, elevated blood pressure, shallow breathing, you begin to see tension in the body as the once fluid motion becomes tense and slow. This tension reduces the body's ability to perform despite the athlete's preparation. This change affects beginners and seasoned athletes alike and no one who participates in competitive athletics can avoid the affects of anxiety and physiological change completely. They can only hope to contain these stressful aspects by managing their mental approach to the game which is the key to letting the physical body perform.

Selective attention can be an effective way to intercept the anxiety symptoms which can cause the body to tighten and become inefficient in its movements. It occurs to the author that years ago in a Peanuts Cartoon Strip by Charles Shultz, there was a scene of Snoopy and Woodstock perched on top of Snoopy's dog house. Snoopy begins quizzing the little bird about aerodynamics. "Now when you take off again, do you push with your feet? Or do you flap your wings first? Do you flap your wings and sort of lean in to it, or do you....." The next panel of the cartoon shows Woodstock has disappeared, having dropped straight to the ground with a KLUNK after takeoff. Snoopy put the lesson into words in the last frame stating "If you think about it you can't do it" (Anderson, 2010).

Back in 1890, William James stated that motor actions seem to be more effective if the participant's attention is focused on the outcome of the action rather than focusing on the kinesthetic movement skills themselves. His forward thinking was both ahead of its time and seemingly overlooked. In James' theory, he illustrated his beliefs through a simple reaching movement test: "Keep your eye at the place aimed at, and your hand will fetch (the target); think of your hand and you will likely miss your aim (James, 1890). Gallwey, (1982), and Schmidt, (1988), further developed this idea by indicating that paying attention to one's own movements can have detrimental effects on performance. Schmidt, (1988), suggested that if you buy your golf opponent a golf instruction book about swing mechanics it will likely disrupt his/her performance. Further experimental evidence by Wulf, & Weigelt, (1997), suggests that giving learners body-related instructions degraded the learning of a ski simulation task relative to no instruction.

It has been hypothesized that giving learners instructions referring to the coordination of their bodily movements, which is typical when teaching motor skills, might not be optimal for learning (Shea, & Wulf, 1999). Wulf and colleagues studied the effects of instructions which direct the learner's attention to the external effects of their movements (external focus) with instructions which focus their attention on the movements themselves (internal focus). The results consistently demonstrated that motor skill learning can be enhanced by external focus more so than internal focus (Wulf, Hob, & Prinz, 1998; Wulf, Lauterback, & Toole, 1999; Wulf, Shear, Gerhardt, & Schuler, 1998). In further studies conducted by Wulf et al., (1999), there was evidence of performance enhancement and learning in golf when directing the learner's attention to the actual club position rather than the swinging movement of the arms. This indicates that the theory of external focus rather than internal focus holds true through a variety of tasks. Prinz

(1990) adds that for perception and action to work together they must be represented in the form of distal events such as the intended outcome of an action.

Instructions in motor learning, or feedback, could be more effective if it directs attention away from the movement itself, and more on the effects of those movements. If there is a significant connection between verbal cues and results; and if verbal cues transmitted from both the player and the coach can manifest in improved skill of hitting a baseball, the study would be considered a success. The theory postulated by Gallwey (1977), as the “bounce-hit” technique will be the basis of this study to determine if the technique can be transferred from tennis to baseball. In both instances the athlete is swinging an object (racquet, bat) at a moving ball in an attempt to hit it inside a specific playing area.

While Magill, Chamberlin, & Hall, (1991), examined the theory of feedback and determined that skill acquisition was nothing more than a coincidence of timing skill. Therefore, it is being considered that feedback applied during skill acquisition should be more advantageous than simply giving instructions prior to practicing. The continuous application of feedback during the skill development should also act as a constant reminder aiding in improved focus.

The aim of this study is to determine if coaching in selective attention cues can improve the performance of both beginner and elite baseball players by improving their ability to hit a baseball. Two questions emerge: 1) “Is there a relationship between visual interpretation and verbal cues which improve the motor skill of hitting a baseball, and 2) “Can motor learning through external-focus instructions and feedback enhance performance?” By learning a process-oriented approach to performing rather than an outcome-based approach (results), it is hypothesized that performance will improve for both beginner and elite athletes.

Chapter 2 - Literature Review

The approach for this study will take into account process oriented teachings and attempt to avoid the pitfalls of outcome centered thought processes which distract and hinder performance. Attention has two different dimensions which most people are able to balance in their approach and reaction to stressful situations. But, in some instances, one dimension overrides the other causing an imbalance and higher stress values. The two areas which follow were proposed by Cromwell, (1968). 1) Breadth of focus – states humans can be very narrowly focused and are able to filter out unnecessary information and stay on task, or 2) Their focus is very broad and they attempt to assimilate all the information which surrounds them at any given time. Having the ability to perform in both areas allows the athlete to excel above others.

Numerous attempts have been made to study the effects of anxiety on the body during athletic competition and there is a great deal of information which points to the improvement of performance while using some standard processes in psychology such as pre-performance routines, self-talk, visualization, and physiological breathing techniques. These are all important parts of the process in attempting to control tension in the body, but the author believes there is another important piece still missing from the teaching mechanism; verbal and visual cues.

Using advanced visual cues of movement patterns is a key element which helps athletes to anticipate how and when an opponent will move (Jackson, and Morgan, 2007). In tennis, for instance, elite players will focus on the movement of the racquet to try and determine the angle at which the ball will be hit. This advance skill allows them to seemingly know where the ball is going before it is even struck by their opponent. Amateurs tend to get lost in all the movement in front of them and don't pick up the ball until after it is on its way across the net, therefore are late

in an attempt to hit the ball. Reading body language is a skill which can be taught and learned through repetition, but can be time consuming. This became evident to Tim Gallwey when he was a tennis instructor and was launching balls at his students. The ball was hit across the net for each student to return, but many students could not reposition their body quickly enough to return the ball back across the net because they lacked anticipation skills and eye/hand coordination. He also determined, at this time, that the students were too focused on the end result and were not seeing the ball clearly.

According to Housner, & Griffey (1994), one of the best known cues for athletic skill improvement came from Gallwey, (1974, 77), when he introduced his “bounce-hit” technique for teaching tennis lessons. This technique requires the student to verbally state cues out loud as they happen, for instance, saying “bounce” when the ball hits the ground, and “hit” when the racquet makes contact with the ball. Tracking the ball visually allows the student to determine the speed and angle of the ball, therefore, allowing them to successfully move and intercept the path of the ball and hit it back across the net. By teaching his students to focus completely on the ball they could pick it up sooner, thus gain valuable time for their mind to anticipate the speed, path, and trajectory of the ball. This technique was an instant success, especially with beginner students who typically lack visual anticipation skills. It’s almost as if the ball slows down allowing the student to successfully return it across the net.

A common misconception concerning training in the area of mental skills lies in the thinking that mental skills training is only for those who have achieved elite status in their sport (Rhea, & Wisdom, 2007). Mental skill training is appropriate for any athlete wishing to improve their skill level during competition, but teachers and coaches are often intimidated and unsure of

how to develop mental skills into a lesson format. The best way is always simply to pick one skill and work on it until it is sufficiently learned by the student, then take on the next (Rhea, & Wisdom, 2007).

This process can be made more effective through simple feedback from the coach as to whether the athlete's verbal cues are early, on-time, or late. (The timing of the subject's verbal cues will be given instant feedback while the coach will rate how well the ball was struck and will be analyzed and returned post test.) The feedback removes the pressure of skill improvement in favor of simply letting the body adjust on its own, tension free, to hit the ball. Gallwey also found that students were able to pick up the nuances of how to hit the ball simply by watching him perform the task a few times (Gallwey, 1974). This came about through a great deal of frustration on his part. While focusing on the tracking of the ball the mind is occupied and able to avoid all the other distractions from outside sources, or outcome-based thinking, and the student's body's just seemed to move into proper position as they had seen demonstrated.

Coaches are always talking about being mentally tough, focusing on each pitch, staying in the moment, but few ever designate any practice time towards teaching the skills necessary to learn how this works. Practice time is for fielding ground balls, hitting, and throwing, and developing a sense for the situational aspects which can occur during a game (Ravizza, & Hanson, 1995). In other words, they are focusing on the outer game. Gallwey, (1977), states that the outer game is played against an external opponent to overcome external obstacles, to reach an external goal. The inner game is played within; where relaxed concentration on a specific task is the goal (Gallwey, 1977). Winning this game is how self confidence is developed

and spontaneous performance occurs; where the mind is calm and at one with the body (Gallwey, 1977).

By giving non-judgmental feedback, the coach is able to participate in the lesson but avoid distracting the athlete, who is able to remain process oriented. By remaining in the moment and focusing on tracking the ball, the athlete avoids distractive thoughts. These thoughts might interfere with hitting the ball such as focusing on the mechanics of how to swing a bat including areas such as grip, stance, and timing. Reflection on the process then allows the student to become more self-aware, and able to recognize if their focus is on the process or the outcome. If we assume that athletes of all ability levels will perform best when they achieve an ideal mind/body state (Harmison, 2006), a question can be raised: “Can athletes learn how to create their ideal performance state?” According to Hardy, Jones, & Gould, 1996, much of the sport psychology research over the past 35 years has examined this question in an attempt to understand the process necessary to produce peak performance.

According to Morgan, (2009), this happens in three stages: stage one is triggered by an awareness of uncomfortable feelings or thoughts, stage two involves a constructive analysis of the situation, examining feelings and knowledge, and stage three involves the development of a new perspective on the situation. Further analysis by Morgan, (2009), focused on what is called the “Hawthorne effect”. This is a management principle which suggests that individuals tend to improve their performance when they are under observation, for example, from a coach. This then presents an additional route to improvement for the athletes in future studies, teaming students together to help each other by observing and providing feedback on performance.

The purpose of this study is to stimulate further research into the physiological effects of anxiety on motor skill acquisition in sport. While the skills of setting routines, self-talk, visualization, and breathing are the foundation on which mental skills programs are built. It is necessary to train these skills in order for the athlete to become more self-aware of their feelings and emotions during competition, but that is not the goal of this study.

Without the ability to notice when feelings and emotions are beginning to have an effect on the body's physiological performance the athlete will often regress in an attempt to control the body's movements. It is also important to pursue other promising skills which can stop anxious feelings caused by performance pressure before they can cause physiological damage to the athlete's motor skill development, therefore improving their chances of hitting the ball. Improving the knowledge and self-awareness of both the mental self and the physical skills necessary to improve your game will improve performance. While training in self-awareness skills is not the goal of this study, it is thought that all participants should have a basic understanding of how these skills can help reduce physiological noise which often causes muscles to tighten and become slow. Therefore, all athletes participating in the study will receive basic training in the areas of positive vs. negative self-talk, visualization, and proper breathing techniques.

Positive and Negative Self Talk

Inner speech is a very common characteristic of humans (Fields, 2002) and researchers feel thoughts which appear as inner conversations occupy our minds to such an extent that it is

believed that what people think or say to themselves is directly connected to how they behave. Ellis (1994) suggests that a person's thinking can affect emotional and behavioral outcomes. In a published study, Dagrou, Gauvin, & Halliwell, (1992), examined experimentally the effects of both positive and negative self-talk on sport performance. They had undergraduate students complete baseline dart throws, then randomly assigned them to groups based on positive and negative conditions before completing another set of throws. Results of the study indicated that those who were asked to verbalize positive self-talk performed significantly better on the second round of dart throws, than the negative group (Van Raalte, Brewer, Brian, & Linder, 1995). Proponents of self-talk also believe that this skill, if positive, can reduce anxiety, increase effort, and enhance confidence, where negative self-talk is virtually thought stopping, resulting in tension, and frustration (Van Raalte et al., 1995).

“Cognitive theories of anxiety assert that self talk lies at the core of anxiety (Conroy, & Metzler, 2004).” Examples of positive self talk can be described as congratulatory self statements, and observed behaviors such as fist pumps, or positive vocalizations (Hardy, Hall, & Alexander, 2001). Negative examples on the other hand include self condemning statements and observed behaviors such as ball abuse, frustration, hitting oneself, and other negative self statements (I am so stupid!) (Hardy et al., 2001). The effects of negative self-talk also seem to be more difficult to abandon making it difficult to break out of the physiological state of negativism.

Imagery and Visualization

Mental imagery is another, if not the most popular method to enhance physical skill according to most sport psychologists (Fournier, Deremaux, & Bernier, 2008). The fact that an athlete can mentally rehearse a skill and improve their abilities to perform the skill makes some shake their heads in disbelief, but the fact is it works. It has been defined as “symbolic sensory experience” and has been shown to help athletes physically reduce tension and anxiety. Mental practice has been called a classic component of psychological skills training where thinking about the skill or watching someone else perform it improves your skill level.

Neurologically speaking, Jeannerod (1995) says motor images are endowed with the same properties as those of the motor representation. In other words, the body responds to simulated movement physiologically the same way it does when an athlete actually performs a skill. The motor image becomes a conscious representation of the actual act. The body’s response affects heart rate, blood pressure, and breathing patterns just as if it were actually happening. Learning to control these physiological responses is the key component of using imagery for sport improvement. Athletes can experience these mental images in two ways, either as if they are a spectator watching themselves perform, or through the eyes of the performer. Both methods seem to be very beneficial in skill development and anxiety control. It is also possible for verbal commands or messages to generate mental images. This part of the skill is intriguing for the author as it benefits his study.

Breathing Techniques to improve performance

When your thinking turns negative your body's physiology follows suit and responds. Your muscles tighten; your breathing becomes shallow, and your heart rate races. Anxiety producing feelings change how you feel and how you react to your surroundings. Games such as baseball, golf, and tennis put such a high emphasis on personal accountability which even the best of professionals can fall victim to poor performance. When you strike out with the bases loaded in a critical juncture of a game, your impulses are to carry that burden out on the field with you which distracts from relaxing and performing your best defensively. Every "at bat" is different; you can't make up for a bad one with the next one. Tension, an increase in tempo, and death grip on the bat are all signs that anxiety is having its way with you.

The only way to respond, which will get you back in the game, is to slow things down and breathe! When an athlete learns to breathe correctly, change occurs in their body's response mechanisms to stress and slows your heart rate, relaxing muscles, and quieting their mind. Belly breathing is the key, but this takes practice away from the field in order to engage it during competition. This is a skill which must be learned and practiced just like learning to hit a moving ball. Belly breathing is easy to use as well, and can be done quickly without anyone even knowing you are doing it. This is a key element to relaxation during stressful competition that most elite level athletes use and amateurs ignore. Training athletes to recognize the symptoms of stress and anxiety during competition increases their ability to make the necessary changes and keep them in the game. Successful hitters in baseball have learned how to deal with the stressors which cause their body's to tighten and focus in on the ball, ignoring all the noise which surrounds them.

Pre-Participation Routines

Pre-participation routines are a major part of most athletic activities in the competitive world of sports; in fact, it is quite possible that this sort of routine takes place without the athlete even knowing he/she is participating. A pre-participation routine is a sequence of task relevant thoughts and actions (Moran, 1996) which occur either before the contest begins or right before a particular point in the activity. As a spectator, you can see it happening right before your eyes as an Olympic gymnast rehearses their moves before an event, or when a diver is seen rehearsing their next dive from the 10 meter platform. Typically, these sorts of routines are most effective in closed skill sports where the athlete controls the timing of the start and finish such as golf, tennis serves, baseball pitching, diving, etc. The objective when performing a closed skill is to efficiently focus attention on task relevant cues and ignore the irrelevant ones (Nideffer, 1992).

Athletes who can adapt or react to pressure in a positive way can be thought of as resilient according to Mesagno, Marchant, & Morris (2008); they stay in the game and move toward the action rather than away from it, they survive. On the other hand an individual who is fearful of the consequences might be described as an athlete who “choked”. Hall, (2004), describes choking as “a critical deterioration in the execution of habitual processes as a result of elevated anxiety levels”. This corresponds to what Nideffer, (1992), called the distraction model. Central to this model is that athletes experience choking when their attention is shifted away from the immediate task at hand. To counter-act this, pre-performance routines have become very effective and are evident in almost all sporting competitions to some extent (Dale, 2004). Some athletes are more susceptible to the idea of choking than others but at times every athlete finds that their attention has shifted away from the current task. It might even be said that

eliminating the tendency to choke is impossible, but reducing the stress associated feelings through the use of pre-performance routines is quite effective (Mesagno, 2008).

Of all the various types of routines which can be used, they all have the same goal in common, to reduce anxiety and the physiological changes which come with it. The routines are intended to enhance performance by helping performers transfer thoughts from task irrelevant to task relevant (Bell, Finch, & Whitaker, 2010). Bell et al. (2010) did a study on collegiate level divers and how routines affect their performance and found that athletes who adhere to a specified routine were significantly more effective during competition.

The key to this is that the routine remains consistent in both time and content. Varying the routine produced unwanted results as the athlete could not eliminate the affects of anxiety on their performance. The time allowed and the content of the routine needs to remain the same in order for the athlete to build trust and eliminate irrelevant thought patterns prior to their performance or activity. Athletes who are struggling to produce quality performances were often observed to be taking greater amounts of time, or just spending extra time rehearsing when a particularly important dive was pending. This variance in routine actually worked against the athlete even though they were in the middle of what they would call a pre-performance routine.

Improving performance and successfully reducing anxiety during competition is the hope of all athletes who focus on the elements listed here. Self-talk, visualization, proper breathing techniques, and pre-participation routines can all have very significant effects on the physiology of the human body in dealing with competitive anxiety. Eliminating anxiety is also the main goal of this study. By reducing outside interference, noise, and other distractive thoughts it is thought that performance should improve and the body should relax.

Chapter Three – Method

Participants

Randomly selected participants will be chosen from three categories based on age. There will be 10 individuals selected to participate in each age division which will be split into two groups (A and B). Group “A” will be a control group which receives no instruction about the practice sessions while group “B” will be given specific instructions and coaching in the new process. Participation group 1 will be randomly selected (10 total) from active baseball players age 12 without regard for established ability levels. Practice group 2 will consist of randomly selected (10 total) high school varsity baseball players (age: 15-18) without regard for playing status as a starter or substitute on their high school team. Practice group 3 will consist of local college level baseball players (10 total) (age: 18-22) without regard for their level of participation (Junior College, NAIA, NCAA Division II). The participants will all be local to Idaho, located in the northwest United States, and will take place during the winter prior to their next competitive season for all groups.

The primary investigator will also be considered as one of the participants in this qualitative study as a participant-observer and will take an active role in the education of each athlete and as their primary source of feedback and instruction. The primary investigator will have had contact with many of the athletes prior to the start of the study as either an acquaintance or coach providing the study with a unique circumstance which should enhance trust and rapport. With this in mind, the athletes should enter the study with a high comfort level that eliminates pre-conceived stress or anxiety about the test and their success or failure.

Instrumentation

One of the most popular accounts for interpreting the relationship between arousal and performance is the model of Individual Zones of Optimal Functioning (IZOF) from Hanin, (2000). This model proposes that there are individual differences between subjects which determine if an athlete can produce their best effort under anxiety producing situations. Some athletes tend to function better when anxiety is low while others need a little extra anxiety in order to peak their interest enough to engage. When athletes feel as if they are in their optimal performance zone it simply means that they are fully engaged in the task at hand but not overwhelmed by the process.

For a qualitative study such as this the IZOF allows for a variety of emotional states which can be seen as helpful or a hindering to peak performance. The IZOF model then helps to explain why one athlete may need fewer stimuli in order to perform well while another may need more stimuli in order to fully engage the problem. By using the IZOF, each athlete may be able to determine their own personal emotional needs and learn how to reach this state of optimal functioning on a regular basis. The PNA model by Hanin (2000), allows each athlete to create their own personalized emotion profile to generate a personally relevant set of key words which will best describe their helpful and unhelpful emotional keys to produce success.

PNA (Hanin, 2000):

By using a modified PNA (Positive Negative Affect Schedule) based on Hanin's model (2000), the primary investigator will try to establish an individualized vocabulary for each

participant prior to physical testing to determine each athlete's positive and negative tendencies during competition. This modified schedule will be loosely based upon the PANAS-X model developed by Watson, & Clark, (1994) and will begin with a 60 item schedule to assess the specific emotional states which each athlete personally manages daily. This schedule measures 11 different emotional affects: fear, sadness, guilt, hostility, shyness, fatigue, surprise, joviality, self-assurance, attentiveness, and serenity.

The primary concern with this schedule is to identify descriptors of a positive or negative affect; these are terms which are distinctly one or the other, positive or negative. Starting with the 60 item schedule the athletes will narrow choices using a Likert Scale evaluation to reduce the number of terms from 60 to 10 positive and 10 negative. From this point each athlete will narrow this list to the most dominant 5 positive and 5 negative emotional terms which fit them personally for both positive and negative emotions. In order to determine the final 5 positive/negative affects the Likert Scale will be used to measure importance from 1 (not at all affected) through 5 (extremely affected) for the importance of each emotional word listed, thereby giving value to each word so that those with little personal effect can be eliminated from the list.

Once the list is established, and prior to each of the three practice units, the athlete will circle the words which most accurately described their current emotions before participation takes place. A practice unit will consist of 5 rounds of 10 swings and each of the 5 participants will rotate in a pre-established order through each round. Three practice rounds will be scheduled to take place on three separate days over the course of three weeks. The results of the PNA compared to the results of the Modified Affect Grid generated immediately following each

round should give the athlete a clear picture in regards to emotional involvement prior to and the effects directly after a round is completed.

Modified Affect Grid (Russell, Weiss, & Mendelsohn, 1989)

The affect grid will be a quick means of establishing the pleasure/displeasure and arousal/boredom levels of each athlete. It is designed to be short so that athletes are not affected by the negative feelings and emotions which can accompany paperwork, especially paperwork in the middle of a physical activity, as this interferes with fluidity and focus. The affect grid, as developed by Russell et al. (1989), is a 9 x 9 grid of squares and is based on arousal levels on one side and pleasure levels across the bottom. Marking your level of arousal as compared to the pleasure it produced on a scale of 1 to 9 establishes a comfort level for peak performance. In order to make the affect grid more beneficial for each athlete it is being modified to include more performance specific information.

By making the grid smaller and less intrusive the arousal and pleasure dimensions will be placed on a separate score card which also includes focus, helpfulness, and a perceived performance score (Cohen et al., 2006). The adjusted grid will be measured on a scale of 1 to 10 for each of the five categories. The arousal dimension ranges from a 1 (sleepy) to 10 (frantic excitement). The pleasure dimension ranges from 1 (extreme negative) to 10 (extreme positive). The helpfulness dimension ranges from 1 (no help) to 10 (very helpful). The Perceived Performance dimension ranges from 1 (poor) to 10 (perfect). The Russell et al. (1989), study was found to be adequate in reliability, convergent validity, and discriminant validity for their

affect grid (Cohen et al., 2006). Cohen et al. (2006), also found in several other studies that measures of arousal coefficient alphas of .91 and .81 respectively (as cited by Raedeke & Stein, 1994). Russell et al. (1989) also reported sufficient convergent validity with correlations of .95 and .96 for pleasure and arousal of their affect grid. There then seems to be sufficient data support to include this modified affect grid in order to measure the levels of focus, helpfulness, pleasure, arousal, and perceived performance in this study.

Chapter Four - Procedures

The current study proposal will be a controlled experiment using qualitative methods of data collection. Success of the study will depend, in part, on the emotional responses of the participating subjects, and the professional coach's evaluation of performance. The proposed study can be qualified as a success if it is evident that study group instructions either had or did not have an influence over the subject's performance as portrayed by the subject and the professional coach. The goal is to determine if the planned approach will or will not have any impact on the subject's ability to hit the ball. A positive result in favor of using the prescribed techniques should invite additional parties to further evaluate the methods and provide additional testing and feedback. A negative result should provide adequate reasoning for not pursuing further research into this area of skill development.

Prior to practice session one, all participants will be asked to attend an informational meeting where they will be given basic instruction in the use of self-talk, imagery, pre-performance routines, and breathing techniques all of which can be helpful when used prior to and during performance. They will also be asked to sign a participation waiver or informed consent form (parents of all minors 18 or under will be asked to co-sign with their child) upon receiving a full explanation of the testing procedures. The inclusion of a study group vs. a control group necessitates holding back information from both groups during this preliminary meeting so that only one group will receive additional information and training in Gallwey's method of ball tracking through visual and verbal cues. Both groups will be tested in the same way focusing on the skill of hitting a baseball, but one group will receive additional training.

Each individual will be instructed on warm up procedures to make sure all subjects are thoroughly warmed up and prepared to be tested in their ability to hit a baseball. All subjects will also be informed that their ability level will be judged by an experienced hitting coach, and that each swing will be video-taped in order for the coach to further break down their swing mechanics and results. The use of a coach and the video equipment is meant to increase the anxiety level for each group prior to participation in the test. Additional expectations will be put on all participants at the start of each practice session and between rounds during a practice session. Manipulation of the expectations for each round is meant only as a diversion to increase anxiety and the expectations of each participant.

Prior to each practice session each subject will review their personal inventory of words as determined by the PNA to refresh themselves on their personal evaluations and the words which they can refer to during testing. In between rounds the subjects will be asked to fill out the modified grid containing individual ratings for “focus, arousal, perceived performance, helpfulness, and pleasure”. Each round of participation will be based on feelings or perceptions of the subjects after completing the round. The athlete’s self-ratings would give additional information to the primary investigator (PI) concerning the subject’s emotional state prior to and during their past experiences which, when combined with the PNA, should provide sufficient data as to their emotional state during the study.

As each group is tested, and additional expectation levels are included for new rounds, the study group will be given additional information on how to use both visual and verbal cues to track the ball as they attempt to hit it. These cues will be based on Gallweys’ model of “bounce-hit” so that verbal cues are integrated with every round of which a subject participates. It is

expected that the continued use of this technique will improve performance of the study group and reduce expected anxiety levels as compared to the control group. Self-evaluations will be discussed with each subject so that the PI does not become biased in the evaluation process and maintains a neutral stance during all testing procedures. Individual subject interviews will also be recorded to maintain the integrity of the study and the non-biased opinions of the subjects involved in the study process.

The study group will also receive verbal cues as to how they are doing during the process of hitting the ball. Information will be given in limited fashion and will not contain any additional coaching in the mechanics or technique of swinging the bat. The verbal cues from the PI will simply let them know whether their swing and verbal cues were “early, on time, or late” in comparison to when they spoke the prescribed word “ball or hit”. Each subject in the study group will be expected and trained in the art of verbally stating the word “ball” when they first see it in flight, and “hit” when they see and feel the ball hit their bat. If the subject says “ball” after the ball is on its way this would be considered a late comment. If the subject says “hit” prior to the time that the ball actually hits their bat it would be considered an early comment. If the verbal statements matched with the movement of the ball and the connection with the bat the coaching cue would be “on time”.

Expected Findings

By providing these timing cues to the subjects it is hypothesized that they will begin to make adjustments solely based on their ability to pick up the ball in flight and when it connects to their bat thus reducing all outside interference, noise, or expectations which might be cause for distraction during their round of batting practice. It is expected that the athlete will, with practice,

be able to approach a flow state where they are so dialed in to tracking the ball that they become oblivious to any and all outside interference for the duration of each round. It is also expected that the coach's evaluation of their actual performance will show an increase of solidly hit balls on their rating sheet, and that video analysis will show a relaxed fundamentally sound swinging of the bat. The act of narrowing the focus of the subject is expected to take precedence over all other expectations allowing the subject to access their subconscious ability to hit the ball rather than a swing produced by the conscious mind which is deemed to be full of swing thoughts, expectations, and self evaluation.

Developing self-awareness and emotional control is critical in orienting the athlete to monitor his/her behavior during competition. Negative thinking may well be the metacognitive manifestation of a lack of attentional control (Cohen, Tenenbaum, & English, 2006).

Incorporating further testing to determine the level of attentional control can help the athlete understand their emotional experience in athletics and provide valuable insight to their reactions during stressful situations.

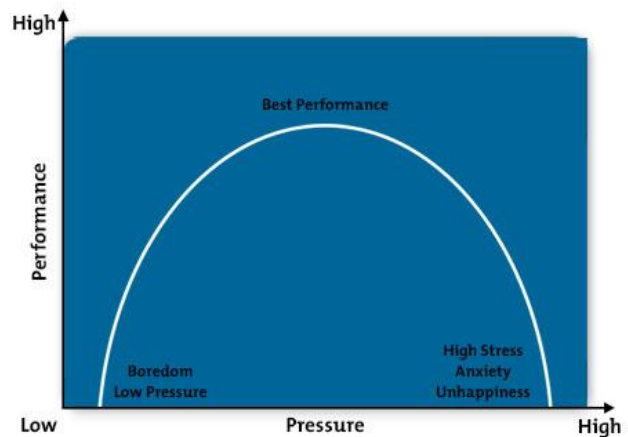
Chapter Five – Discussion

Regardless of what type of physical activity you participate in, if it becomes competitive, you will feel the effects of anxiety. In most casual, playful activities this never becomes an issue as the expectations are simply to play for fun. In fact, in this type of activity the small amount of stress which your body feels is actually just enough to trigger an increase in your adrenaline levels and supply energy to your body. On the other hand when the competition heats up and your performance is evaluated, anxiety levels can and will have an effect, possibly negative, on your performance.

With this being said, this study has focused on the effects of anxiety and stress on the body/mind during athletic competition in pursuit of new information which can help athletes manage anxiety and improve physiological performance. Working smarter, not harder has proven to be effective in the sporting world once physical skill is acquired but how do we do this? How does an athlete perform at high levels during competition and reduce the effects of anxiety on the body at the same time. When expectations go up, so do anxiety levels, which then cause the body to lose its fluidity and ability to perform as it did with less stress.

The debilitating effects of high anxiety can range from that feeling of “butterflies” in your stomach to full blown panic attacks (Graydon, 2002). For years there have been studies, theories, and explanations put forth to try and explain and understand this relationship between stress and performance (Graydon, 2002). While we are gaining a great deal of knowledge in this field, it is evident that controlling our emotions during high expectation events is easy to say, but very difficult to do.

A long standing approach to understanding this relationship dates back to 1908, where Yerkes and Dodson discussed the effects of stress, anxiety, and performance and created a model called the “Inverted-U Theory”. This theory postulates that as your arousal level increases your body’s response also increases producing higher levels of performance; up to a point. But, when your arousal levels



become too high to manage, your mind becomes more occupied with the anxiety produced by high arousal levels than it is with performing the skill and performance begins to decline.

Hardy, & Fazey (1987) created what they call the “catastrophe model” which discussed this issue of performance deterioration when athletes are under high cognitive anxiety and high physiological arousal. They predicted that there may be a sudden catastrophic collapse in performance levels if balance is not maintained between anxiety and arousal levels.

Similar to the inverted-U Theory, they, Hardy, & Fazey (1987), predicted that if cognitive anxiety were low, the effects on performance would be minimal, but if cognitive anxiety were high there would be a sudden, unexplainable and large collapse in the athlete’s performance. Baumeister (1984), states that under pressure, the expert athlete reverts to the novice level by attempting to use conscious control. This destroys all fluidity of movement causing a breakdown in performance levels. This scenario has played itself out on the small stage, and the large stage in front of millions of onlookers who sit and wonder “what just

happened?” Choking, as it is commonly referred to, is the hidden fear that no one wants to talk about, yet takes place daily in the athletic world.

When the musculature and physiological systems of the body begin to tighten, they slow down reflecting in poor performance. Trying harder doesn't solve it; receiving more coaching on techniques can't do it either. Too much information is being processed by the mind, therefore confusing the body as to what the task really is. “Extra effort does not work” according to Eysenck, & Calvo (1992). The sudden breakdown in skilled performance and the inability to perform a well-learned and practiced skill turns into a dismal performance. The amazing thing is it strikes suddenly and seemingly without warning. One minute you are fine, the next you are spiraling out of control.

Over thinking, hesitation, increases in physiological responses, and becoming ultra self-conscious all contribute to this problem which leaves us wondering “how do we fix it?” How do we stop the drop in performance and regain our composure? Reducing cognitive anxiety is the place to start, but that is easier said than done when millions of thoughts are flying through your brain; how do we create calm in the midst of the storm? It is the goal of this study to try and limit the effects of anxiety on performance by teaching a minimizing strategy which will stop the fall; bringing the athlete back to a stable comfortable place where the goal is to simply see the ball, and hit the ball, nothing more, nothing less, even in the midst of the storm.

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