

**The Effect of Energy Psychology on Athletic Performance:
A Randomized Controlled Blind Trial**

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Abstract

This study investigated whether the most widely practiced form of Energy Psychology, called Emotional Freedom Techniques (EFT), could affect athletic performance. It evaluated whether a single brief EFT treatment for performance stress could produce an improvement in two skills for high-performance men's and women's college basketball teams at Oregon State University. The treatment group received a brief EFT session while the control group received a "tips and techniques reading" (TTR). Performance was measured on free throws and vertical jump height. Basketball players who received the EFT intervention scored an average of 21% better individually in free throws after treatment than the control group, while the control group scored an average of 17% lower ($p < 0.028$). However, there was no statistically significant difference between the groups in their percent change in jump height. When analyzed separately, there was a trend for females in the EFT condition to have better performance on both free throws and jump height than females in the control group. These findings suggest that EFT performed as an intervention during the course of an athletic event may reduce performance stress, and improve individual player function for free throws, and is thus worthy of further study. This study was limited by the small sample size and short duration of the intervention.

Keywords: Stress, performance, Emotional Freedom Techniques (EFT), anxiety, sport.

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Introduction

There have been numerous studies of the effect of Emotional Freedom Techniques (EFT) and other Energy Psychology (EP) therapies for various psychological conditions, including depression, anxiety, phobias, and posttraumatic stress disorder (PTSD) (Feinstein, 2008a). However, no prior study has examined the effect of EP on healthy and high-performing individuals. This study investigated whether EFT could make a difference in elite athletes by treating any stress or anxiety that might underlie their performance.

EFT was developed Gary Craig as an abbreviation of the methods used in Thought Field Therapy or TFT, an earlier Energy Psychology method which used elaborate diagnostic and treatment protocols (Callahan, 1987). Craig came to the conclusion that EFT's brief and standardized protocol could treat most of these problems without the need for lengthy diagnoses, and organized these points into a easily-administered method (Feinstein, et al. 2005). EFT may be self-administered, but may also be administered by a coach or therapist (Church, 2008a).

There are several hundred clinical reports at the EFT web site (Craig, 2008), and studies have found the technique effective for several types of psychological distress, such as anxiety (Rowe, 2005) and phobias, (Wells, et. al, 2003, Lambrou, et. al., 2003). Most of these studies use a single session of EFT, and the effects of EFT have been found to hold over time (Rowe, 2005, Wells, et. al., 2003). No negative side effects have been reported (Feinstein, 2008a). Clinical reports also suggest that by reducing emotional trauma, EFT can have an effect on physical conditions including joint pains, allergies, chronic fatigue syndrome, rashes, arthritis, colds, flu, and toothaches (Feinstein, et. al. 2005, Church, 2007b). A randomized blind clinical trial has found EFT to be effective for fibromyalgia (Brattberg, 2008).

There is considerable debate as to the mechanisms of action of EFT and other Energy Psychology therapies. Craig and other proponents of EFT believe that the method is effective because it makes use of "energy meridians" corresponding to the endpoints of the acupuncture meridians described by traditional Chinese medicine

(Gallo, 1999). However, other authors have advanced more conventional hypotheses to explain the efficacy of Energy Psychology, including:

- The deactivation of the arousal of the amygdala and other fight-or-flight structures in the brain that occurs during traumatic recall (Feinstein, 2008a)
- The semiconductive properties noted in connective tissue when a piezoelectric stimulus is produced by manual stimulation (Oschman, 2006)
- Stimulation of the rapid reuptake and resynthesis of stress hormones such as cortisol (Church, 2008b)
- Changes in the secretion of neurotransmitters such as serotonin and dopamine (Feinstein, et. al. 2005).
- Termination of the alarm response in the Sympathetic Nervous System, and replacement with a relaxation response in the Parasympathetic Nervous System (Lane, 2006).
- The release of serotonin in the prefrontal cortex of the brain (Ruden, 2005).

More research is required to determine whether one of these physiological factors, or a combination of them, comprises the active mechanism of EFT and other Energy Psychology therapies. While their objective mechanisms cannot be determined without further study, their subjective evidence base comes from the self-reports of those utilizing these therapies, and the case histories of clinicians. Participants in the published studies summarized by Feinstein (2008a) typically report large drops in their pain and distress levels for one or more of their perceived causes of anxiety, a decrease in stress, and an improvement in performance.

The present study was designed to determine if EFT could be used successfully on athletes to improve performance, either in a team context or individually, and measure changes in a way that both insured methodological quality and provided a replicable experiment. Participants were members of the Oregon State University

men's and women's basketball teams. The opportunity to study basketball athletes at Oregon State University grew out of the successful use of EFT by the baseball team, some members of whom had learned EFT two years prior (*The Oregonian*, 2007). The game of basketball chosen because psychological stress has been demonstrated to affect free throw performance (Whitehead, 1996), and empirical measurements can be obtained in a compressed time frame.

Analysis has shown that accurately performed free throws are one of the most critical factors in winning basketball games (Trninić, 2002), leading to performance stress on players being asked to perform this maneuver. Free throws have been used in more than two dozen studies reported in the Pubmed database to measure the effects of treatments such as Cognitive Behavioral Therapy (CBT) on athletic performance.

In this study, the EFT treatments were administered under randomized controlled blind conditions, as described below. The goal of the study was to examine the effect of EFT on two specific skills relating to the game of basketball: percent of free throws, and jump height. The primary hypothesis being tested was whether EFT would mitigate the performance effects of stress, thus improving athletic performance.

Method

Participants and Procedures

The study was performed at Oregon State University with the men and women's basketball teams, and data gathering took place during the course of a single week. A total of 26 players participated, 14 male and 12 female. The men and women reported at a designated time, and informed consent was obtained. The woman's team study was done in a single afternoon, while the men's team was studied in a morning of the same week. The head coach for each team was briefly present at the start of each session, but did not address the team or stay to observe the study. The men's team had four assistant coaches, who were present for the duration of the study. No assistant coaches were present for the women's study. To provide for a blind placebo control,

the control group received an inspirational reading of tips and techniques (TTR) written by a former college basketball coach.

All subjects performed their regular warm-up period, to eliminate any effect on athletic performance of inadequate muscular preparation. The warm-up was of a nature and duration standard to the teams, lasting approximately ten minutes and consisting of stretches and running.

All subjects then performed six jumps on the jump pad, and ten free throws, after which the subjects were randomized by an independent research assistant into two matched groups: Team X and Team Y, based on the last three of the six vertical jump height measurements. The player with the highest jump was assigned to Team Y, the one with the next highest jump went into team X, and so on, until all the players were distributed into one team or the other. In order to control for investigator expectancy, the randomization of the teams and data recording done throughout the study was done by research assistants without significant experience with EFT, though they had heard of EFT, and of the author of the TTR reading.

The researchers measured the vertical height of the subjects' jumps using a jump pad, a device that electronically records and displays jump height. They also recorded the number of successful free throws, before and after the session, and calculated the percentage of improvement or decline. Both raw data and a statistical analysis are provided in the Results section below.

Other members of the team observed the participants while the jumps and free throws were being recorded. Prior research using free throws as a measure has suggested that human performance changes when under the stress of observation by others (Moore, 1993, Whitehead, 1996), and the observation by other team members simulated that effect.

During the course of the testing, the two teams were at opposite ends of the basketball court, and following randomization, they were instructed not to talk to each other for the duration of the study. They were also instructed to practice free throws, run, dribble, do vertical jumps, and generally stay warmed up for the duration of the

study. This was done to counteract any confounding effect due to body cooling between measurements, and to simulate the fatigue over time that players might experience during the course of an actual basketball game. The effects of fatigue on both the muscular and nervous system, and the subsequent degradation of performance during the course of a game, have been described by other researchers (Kuipers, 1998, Williams, 1995). Athletes were also instructed to drink as much water as they needed, since dehydration has been shown in other studies to affect free throw performance (Hoffman 1995, Dougherty 2006).

The free throw test consisted of ten throws to the basket from a mark on the court called the free throw line. Players were familiar with this test. For the jump height test, the Probotics jump pad (www.Probotics.org) was used to measure jump height, and was located in the middle of the court, between the two teams. This pad measures the player's jump height by units that represent tenths of an inch (for example, 265 units is equivalent to 26.5 inches). Vertical jump height is a selection criterion for college basketball athletes, and all the athletes were familiar with the jump pad procedure and measurement.

The experimental treatment consisted of approximately fifteen minutes of EFT, while the control group received approximately fifteen minutes of TTR, performed in a ten minute session and a five minute follow-up session. The time lapse between the first test of the first participant and the last test of the last participant was approximately two hours. Compressing the data gathering and treatment into two hours was designed to approximate the time period of an actual basketball game.

For treatment, each of the teams was taken as a group to a different location in the building. They were then told the nature of the intervention they were to receive, with care being taken to maintain blindness. The first participants were randomly selected from each team and the rest of the team members were asked to return to their end of the basketball court and to "stay warm." This was accomplished by the performance of drills and impromptu games, in order to produce the same degree of

progressive muscle fatigue and performance degradation noted during regular games (Busso, 1994, Bigland-Richie, 1984).

In both the experimental and control groups, treatments were then administered individually. A participant was taken into a private office, and the first ten minute treatment was administered. Participants then went back to the court, performed three vertical jumps, and returned to the treatment room for an additional treatment lasting approximately five minutes. After this, they returned to the court to perform three final jumps and a post-treatment set of ten free throws. This process continued until all team members were treated.

Treatment Interventions

The experimental group received EFT according to the protocol below. Therapists who performed EFT interventions had experience in using EFT for sports performance. The control group received the tips and techniques reading, TTR, which was written by a former college and professional basketball coach, Phil Pitino, and read to them by a therapist or assistant coach. It covered topics such as setting high personal standards, improving with practice, building self-confidence, positive thinking, handling stress well, and the value of hard work (*Success*, 1998).

EFT is an exposure therapy that combines both cognitive and somatic elements. In the first step of the EFT session, participants identify their degree of distress on an 11 point Subjective Units of Distress (SUD) scale (Wolpe, 1958, 1973). On the SUD scale, zero represents no problem, and ten represents the most pressing experience of the problem. In the case of physical pain, for instance, zero represents no pain, while ten represents the most extreme pain imaginable. In the case of emotional pain, the subject is asked to identify a point in the body particularly identified with the pain, and to note its SUD score.

After deriving a SUD score, participants create a short verbal summary of the problem they wish to change, and combine it with a statement of self-acceptance. In EFT this is referred to as the “setup statement.” A setup statement pairs the problem with acceptance, e.g., “Even though I have (this problem), I fully and completely accept

myself.” An example of a setup statement involving athletic performance is, “Even though I worry that I’ll tear a hamstring if I jump too high, I fully and completely accept myself.”

Following this brief cognitive element of the therapy, the somatic portion of the treatment is administered, either by the individual or a therapist. This involves tapping with the fingertips of one hand on twelve parts of the body, referred to as a “round” of “tapping.”

The first point is the fleshy outside edge of the hand, called, for convenience, the “karate chop point.” The participant taps this portion of the opposing hand repeatedly, while repeating the setup statement three times.

Next five points on the face are tapped about seven times: the inner terminus of either eyebrow, the side of the eye socket, the center of the bony ridge below the eye, the middle of the upper lip just below the nose, and the center of the chin.

Then two points on the torso are tapped: the junction of collarbone and sternum, and the lowest rib under the arms.

Lastly, five points on the hand are tapped, the part of the cuticle of each finger closest to the body, with the exception of the ring finger, and finally the groove between the bones of the last two fingers on the back of the hand.

After a round of tapping, subjects provide a second SUD score. Subjects typically report a decrease in the distress associated with a negative emotion or traumatic event after rubbing or tapping these points, e.g. “My anger was an eight but now it’s a three.” Two or more applications of EFT may be used to further reduce the SUD score. In this study, most participants completed one or two rounds of tapping in the first (ten minute) session, and a single round in the second (five minute) session.

In interviews with the athletes during this study, it was determined that their stress centered on issues involving their athletic and life problems, and that these factors were self-perceived to be affecting their game. There were four treatment targets for the EFT experimental group. Their “setup statements” focused on:

- Limiting beliefs about performance

- Anxieties in general
- Negative past experiences
- Muscle memory of past maximum achievement

Typical problems were tiredness, stress from facing exams, homework or poor grades, and family conflicts. Some issues were general and global beliefs: “I’m a poor athlete, but the team needs me because I shoot well.” Others were very specific, “My upper body is strong, but my legs are weak. I’ve never been a good jumper.” Some were from long ago, “My father went to jail when I was five, and I never saw him again,” and others were from the present, “I’m worried about being here because I have a huge amount of homework to finish today.” Thus a setup statement for a negative belief might be: “Even though I have weak legs, I fully and completely accept myself.” A setup statement for a desired condition might be, “My legs are powerful and strong.”

The goal of EFT treatment was to reduce the SUD level for one or more such issues during the short course of treatment, reduce the impact of the identified traumatic event, administer the somatic portion of treatment, and measure the results. Alternatively, EFT was performed while imagining a positive desired outcome.

Results

Data analysis was subsequently performed by an independent statistician blind to the condition. The Raw Scores Table below shows the raw scores obtained in this study, and the calculated percent change in free throws, as well as the percent change in mean for the jumps. A data key is provided below; the EFT or experimental group is designated “Exp” and the TTR or control group is designated as “Cont.” For both groups, the women’s scores appear first.

Table 1: Raw Scores

Exp	BFT	AFT	% Δ	H1B	H2B	H3B	H4B	H5B	H6B	H1A	H2A	H3A	H4A	H5A	H6A	AHBT	AHAT	% Δ
E1	10	7	-30%	175	178	180	179	195	187	180	185	189	178	183	177	182	182	0%
E2	9	10	11%	194	199	202	200	202	207	196	198	200	200	200	208	201	200	0%
E3	9	7	-22%	155	154	148	149	150	152	153	153	149	144	145	150	151	149	-2%
E4	6	7	17%	180	188	189	183	186	184	185	184	185	181	173	175	185	181	-2%
E5	9	9	0%	159	161	158	165	158	162	155	155	159	158	165	161	161	159	-1%
E6	5	7	40%	216	223	210	217	222	221	229	211	213	219	228	222	218	220	1%

Exp	BFT	AFT	% Δ	H1B	H2B	H3B	H4B	H5B	H6B	H1A	H2A	H3A	H4A	H5A	H6A	AHBT	AHAT	% Δ
E7	8	8	0%	253	265	263	259	279	266	235	242	258	253	258	256	264	250	-5%
E8	10	9	-10%	261	268	272	263	278	273	270	271	273	260	261	277	269	269	0%
E9	3	7	133%	291	291	292	305	298	297	322	315	321	293	301	301	296	309	4%
E10	9	10	11%	220	224	217	234	234	251	218	218	220	232	228	229	230	224	-3%
E11	8	7	-13%	265	284	313	330	333	324	300	317	309	325	308	303	308	310	1%
E12	6	6	0%	277	270	271	271	278	292	252	261	281	244	248	236	277	254	-8%
E13	3	7	133%	292	314	292	312	313	303	268	279	282	343	344	305	304	304	0%

Cont	BFT	AFT	% Δ	H1B	H2B	H3B	H4B	H5B	H6B	H1A	H2A	H3A	H4A	H5A	H6A	AHBT	AHAT	% Δ
C1	7	6	-14%	215	220	210	216	216	217	207	216	217	205	206	220	216	212	-2%
C2	10	8	-20%	165	169	157	156	167	158	163	165	160	166	162	162	162	163	1%
C3	10	6	-40%	194	197	196	188	197	205	185	190	190	185	182	189	196	187	-5%
C4	9	5	-44%	228	219	290	228	199	211	208	203	200	203	212	204	229	205	-11%
C5	7	6	-14%	159	148	155	145	152	149	141	139	144	147	138	137	151	141	-7%
C6	8	8	0%	186	186	188	179	183	184	179	180	178	177	182	180	184	179	-3%

Contr	BFT	AFT	% Δ	H1B	H2B	H3B	H4B	H5B	H6B	H1A	H2A	H3A	H4A	H5A	H6A	AHBT	AHAT	% Δ
C7	8	10	25%	222	199	203	224	205	206	213	205	219	212	209	209	210	211	1%
C8	7	3	-57%	252	291	276	270	265	278	307	311	299	290	260	284	272	292	7%
C9	9	9	0%	306	313	301	316	320	322	285	302	309	305	310	313	313	304	-3%
C10	6	5	-17%	266	273	270	281	271	278	284	279	263	287	273	289	273	279	2%
C11	5	5	0%	298	284	290	313	310	309	295	281	293	303	313	292	301	296	-1%
C12	9	6	-33%	232	235	243	216	251	244	222	204	240	235	240	246	237	231	-2%
C13	9	9	0%	281	279	279	293	295	296	268	263	265	268	263	265	287	265	-8%

BFT = Before Treatment Free Throws AHBT = Average Height Before Treatment
AFT = After Treatment Free Throws AHAT = Average Height After Treatment
H1B = Height 1 Before Treatment % Δ = percent change
H6A = Height 6 After Treatment All numbers in tenths of an inch

Free Throw Results: T-tests were conducted on the percent change score for free throws to determine whether there significant group differences. A statistically significant difference was found ($t(32)=-2.34, p<.028$). The athletes treated with EFT improved their free throw performance by an average of 20.8% (SD + 22.5%), while the control group decreased by an average of 16.6% (SD + 53.0%).

Table 2: Male and Female Combined Free Throw Statistics

	TX	N	Mean	Std. Deviation
Throw percent change	Control	13	-16.6	22.5
	Treatment	13	20.8	53.0

When the analyses were conducted within gender, there was a trend towards significance for females ($t(10)=-1.96, p<.078$). Free throws increased an average of

2.6% (SD \pm 25.9%) in the female treatment group versus the control group. The control group decreased an average of 22.2% (SD \pm 16.9%). There was no significant difference between treatment groups for males ($t(7.9)=-1.78$, $p<.114$).

Table 3: Female Free Throw Statistics

	TX	N	Mean	Std. Deviation
Throw percent change	Control	6	-22.2	16.9
	Treatment	6	2.6	25.9

Table 4: Male Free Throw Statistics

	TX	N	Mean	Std. Deviation
Throw percent change	Control	7	-11.7	26.8
	Treatment	7	36.5	66.6

Jump Height Results: There was no difference between the treatment and control groups on the percent change in jump height for males and females combined ($t(24)=-0.79$, $p<.47$) and for males when analyzed separately ($t(12)=-0.429$, $p<.68$).

Table 5: Male and Female Jump Height Statistics

	TX	N	Mean	Std. Deviation
Jump percent change	Control	13	-2.3	4.6
	Treatment	13	-1.2	3.1

Table 6: Male Jump Height Statistics

	TX	N	Mean	Std. Deviation
Jump percent change	Control	7	-0.6	4.6
	Treatment	7	-1.6	4.2

However there was a trend towards significance for the females ($t(5.9)=-2.13$, $p<.078$). Females in the treatment group showed close to no change in jump height (decreased 0.73%, SD \pm 1.2%), while females in the control group decreased 4.3% (SD \pm 4.0%).

Table 7: Female Jump Height Statistics

	TX	N	Mean	Std. Deviation
Jump percent change	Control	6	-4.3	4.0
	Treatment	6	-0.7	1.2

Discussion

Most studies of EFT and other forms of Energy Psychology have focused on psychological distress. Conditions such as phobias and anxiety have been the object of considerable examination and evaluation, and these therapies have been studied in even extremes of distress such as holocaust victims in Rwanda and ethnic cleansing victims in Kosovo (Feinstein, 2008b). However, no studies have yet been conducted of the effects of EFT on athletic performance, even though the brief nature of this intervention makes it more suited to application during stressful situations than therapies that require a series of office visits. Such studies are timely, given the many reports from coaches and athletes of EFT being applied in professional and college level golf, baseball, and American football (Achenbach, 2007).

A limitation of this study is its small sample size. Performance changes by 6 of the 26 players accounted for most of the variation in results. To compensate for this limitation, statistical measures intended to compensate for individual variance were employed. When analyzing small samples, t-tests are used to account for degrees of freedom in the sample size. The above results fall within the parameters of the statistical tests chosen to analyze them. However, replication in larger subject populations is required to see if these results are typical.

The results raise some additional questions. Why did vertical jump height not improve to a statistically significant degree, while free throws did? Possible reasons include player fatigue, player boredom, the passage of time, and the brevity of the treatment. The therapists administering EFT expressed frustration at the brevity of time available for treatment inherent in the research design. It is challenging for a counselor or coach to both identify and treat a condition in a period as brief as ten

minutes, and it represents a further challenge to establish trust and rapport with a stranger in that brief period of time. Any psychotherapy modality requires the building of trust between therapist and client, and this takes time. Clients do not usually open up with deep-seated emotional issues with a therapist until well into an hour-long session, and sometimes not until several sessions have elapsed.

Another possible reason why jump height did not change significantly is that it may be less dependent on emotional states, and more dependant on physiological factors, such as physical conditioning, flexibility, and strength; while free throws may be more affected by emotional factors, such as stress. There is evidence to suggest that players with the ability to perform consistently under stress have better free throw percentages (Whitehead, et. al., 1996).

For this reason, established therapies like Cognitive Behavioral Therapy or CBT usually prescribe between 6 and 12 one-hour sessions to show results. A study using CBT for jump height improvement found that as players moved from negative cognitions such as the limiting setup statements above, to positive ones, their jump height improved significantly (Hamilton, 1985). Another study of CBT also found improvement in free throw percentages after treatment, though again, between 7 and 9 hours of treatment were required (Kearns, 1996). The quality of self-talk has also been found to affect free throw scores (Theodorakis, 2001). All these studies used courses of therapy much longer than the 15 minute format allowed by the current study. The clinicians administering EFT during this study speculated that to have an effect on jump height, they would have required longer therapeutic sessions, or even several sessions.

The discharge of emotional trauma might have a positive effect on athletic performance. The contrary hypothesis has been proposed: that athletes who are angry and anxious may be able to funnel that energy to produce greater vigor during play. However, the study of basketball teams has shown that emotional equilibrium and calm judgment contribute to factors that determine success in basketball, such as accuracy and sensitive teamwork (Trninić, 2002). Consistently good players are able to

perform well even under stress. The ability to discharge stress, and stay focused, allows an athlete's full skill set to come to bear on the athletic task at hand.

While athletes formed the subject pool of this study, other research finds that EFT reduces stress in general populations as well. A study of 102 individuals (Rowe, 2005) demonstrated decreased scores on measures of anxiety, depression and other conditions after EFT treatment. The results held up on six month followup. Outcome studies of EFT in clinical settings have shown a large effect size, and efficacy in a wide variety of psychological conditions (Feinstein, 2008a). For this reason, it is being studied in many primary care settings, including two clinical trials in Britain's National Health Service; the unpublished preliminary results of these and other studies in progress yield results consistent with Rowe's findings (Church, 2008c).

Conclusions

Clinical reports, and accounts from coaches and athletes, show that EFT is widely practiced in professional and college level golf, baseball, and American football. This study indicates that a very brief application of EFT can increase certain measures of performance in high-performing individuals, producing a large effect size in a compressed time frame. The brevity of a typical treatment renders EFT suitable for reducing stress during athletic performance. EFT appears to have similar effects on both women and men. The use of EFT for stress reduction in sports warrants further empirical evaluation. Further study is also required to determine if longer courses of therapy with EFT produce changes in vertical jump height, or greater improvement in free throw scores. The study of this therapy in healthy populations, and peak performers, opens up new potential applications for Energy Psychology.

Acknowledgments

Thanks to psychiatrist and clinical psychologist colleagues who provided advice on study design and on drafts of this paper: Daniel Benor, MD, David Feinstein, PhD, John Freedom, CEHP, Phillip Friedman PhD, Richard Leskowitz, MD, Gregory

Nicosia, PhD, Jack Rowe, PhD, Norman Shealy, MD, PhD, and members of the ACEP Research Committee. Special thanks to Greg Warburton, LPC, who arranged access to the OSU teams, assisted in the study, and together with Stacy Vornbrock, LPC, provided treatment. Thanks to Audrey Brooks PhD for data analysis, and to Leane Roffey Line PhD for editorial assistance. Thanks to women's basketball head coach LaVonda Wagner, men's basketball head coach Jay John, and OSU Director of Athletics, Bob DeCarolis, for their cooperation in conducting this study.

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