



## **Entering the Performance Zone: a Practical Pre-Lecture Guide for New Faculty**

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## Introduction

While, in recent decades, undergraduate engineering curricula have been strengthened through an increased emphasis on projects and hands-on learning, the need to provide students with effective lectures remains a key component of our role as engineering faculty.<sup>1,2</sup> Effective lecturing has been shown to be essential to student learning and is a central part of student evaluations of faculty.<sup>3</sup> There exists a robust body of work on the practice of lecturing, both in terms of delivery of the lecture itself as well as lecture preparation.<sup>4,5</sup> However, even when we follow the advice and practice outlined by the literature, our lectures may still fall flat, often for reasons unknown to the instructor. In this paper, we build upon the ideas presented in the existing literature by highlighting an often neglected stage conducive to high-energy, effective lectures: the pre-lecture stage.

The pre-lecture stage consists of what we do in the time interval just before a lecture. The importance of a healthy pre-lecture stage becomes clear when we first recognize that lecturing is, at its core, a form of public performance. We speak in front of an audience, attempt to connect with them, and hope that our message has a lasting impact. In other performance venues, such as theater or athletics, the performer often follows specific techniques and routines to effectively be “in the zone” for a performance.<sup>6,7</sup> As instructors, we can exploit this same concept. In this paper we outline several practical techniques that are conducive to mastering the pre-lecture stage, that is, entering the Performance Zone.

Among the pre-lecture techniques we discuss are the following: pre-lecture stress management (particularly stress due to other aspects of the faculty role), the ideal timing of preparation of slides and lectures notes, and the identification and use of lecturing role models towards mental preparation for the Performance Zone. We also explore, in the context of the pre-lecture, the value and timing of socialization, nutrition, physical movement, and helpful meditation and breathing techniques. We finish by including one brief post-lecture technique that serves as reinforcement of the above.

While this article might be particularly useful to new faculty, we hope that experienced faculty will also find some of the specific techniques to be applicable and beneficial to their own daily work. We are confident that by identifying and putting these techniques into action, faculty will make significant progress towards improving their own lectures, communicating their material more effectively, and, ultimately, improving their students’ learning.

Afterwards, in the following section of the paper, we present a practical guide with effective methods for entering the Performance Zone. We divide the guide into eight focus areas of daily activities present in our professional life. For each of these eight focus areas, we will provide concrete, practical advice on steps you can take towards achieving your own Performance Zone.

A point we wish to emphasize is that, as with other types of performances, the advice we provide here is most valuable when the performer makes the necessary adjustments to his or her own circumstances. Based on your own strengths, weaknesses, schedule and personality, there might be some advice in this article which, with some slight modifications, could yield tremendous tangible benefits in your professional life.

### Conceptual Framework: the Performance Zone and the Pre-Lecture Stage

Most people are familiar with performers of different varieties. Since childhood, most of us have witnessed countless performers in the arts (such as singers, musicians, actors, and dancers) as well as in sport (gymnasts, football players, track and field athletes, etc.). So, most of us probably have an intuitive notion of what a performer is: someone who carries out an activity or presentation in front of an audience, seeking to entertain or communicate a message.

What may not be obvious is that, as a new faculty, you too are a performer. Indeed, your job requires you to be a performer in the purest sense. Consider that, in the case of artistic and athletic performers, the performer has an audience. He or she is accomplishing a task, but simply accomplishing the task is not in and of itself the only thing that matters. Of just as much importance as the task itself is the idea of communicating a certain vision or message to the audience. Similarly, we as faculty members seek to effectively convey a message to our students, and to do so in an engaging fashion.

There are many psychological factors related to performing in front of an audience. One factor that affects many performers is the anxiety that results from the risk of not just doing a job poorly, but with doing so in front of others. We encounter this same challenge when lecturing. Our students have their eyes and attention fixed on us. They expect to be both informed and, in a way, entertained. Also, just as in the case of the audiences for other performers, while students will scrutinize our performance in detail and criticize our failures, most of them are hoping that we will do our job well and provide them with a positive performance.

Based on the many parallels between teaching and performing in the more traditional venues, we theorize that there may be value in identifying what other performers do to become better at their jobs, and use those insights so that we may in turn use that to become better lecturers.

One of the common themes amongst many types of performances is that, prior to the performance itself, many successful performers enter a state, or “zone,” where their mental and physical abilities are particularly in tune for the task at hand.<sup>6,7</sup> We shall refer to this condition as being in the “Performance Zone.” Naturally, the specific characteristics of the Performance Zone vary widely from activity to activity and from person to person.

In order to improve performance to optimum levels, there has been much attention paid to how

to achieve this mental and physical state across different disciplines. In fact, for some of the above types of performances described, there have been very methodical approaches, such as musicians practicing simple scales or sports coaches making their teams go through a very specific set of warm-up drills prior to a match. Additionally, many performers develop their own personal approaches, for example, listening to a favorite song or go through meditation exercises so as to reach a specific mental state.

In other performance-related activities, the moments leading up to the performance itself are of paramount importance. Similarly, what we do during the minutes prior to a lecture can be critical to its success. For the rest of the paper, we shall refer to this period as the “pre-lecture stage.” While the duration of the pre-lecture stage might vary depending on specific circumstances, for the effects of this paper, the typical duration we are considering is roughly between 5 and 30 minutes. Less than that would cause the instructor the risk of being late for class or not having enough time to do the pre-lecture activities we recommend. More than that might encroach upon the instructor’s other daily tasks.

Again, we believe there is very significant value to studying what we can do during the pre-lecture stage to help us reach the Performance Zone. After all, lecturing is a critical part of our job, and we should therefore take a systematic approach, such as sport coaches do, to make sure we are physically and mentally ready for it. Additionally, as many performers, it would be of great benefit to fine tune these techniques to make them as personally useful as possible. In short, we need to devise ways to enter our own Performance Zone.

### How to Enter the Performance Zone: a Practical Guide

Now that we have outlined the fundamental goals and concepts around which the paper is structured, we now present a practical guide on steps we can take during the pre-lecture stage to maximize our ability to enter the performance zone. We divide the guide into eight key focus areas of daily activity. In each of these areas, we provide a brief discussion, with concrete pieces of advice on how you might make improvements in that area to benefit your lecturing. We close each area with a succinct “bottom line” for quick reference on practical steps towards achieving the performance zone.

#### Focus area #1: Pre-lecture stress management

As new faculty, we face many challenges and stressors, some of which are the same we have experienced since graduate school: deadlines for a conference or journal paper, pressure from a difficult co-worker, etc. There are others which might be new: dealing with schedule issues for advisees, learning the lay of the land in terms of how the college or university operates, or even figuring out how to contact the department’s technician when laboratory equipment malfunctions. Additionally, there are other stressors that do not necessarily relate to the job itself, but which can often be the most detrimental stressors of all: the challenges of moving to a new location, difficulties in relationships with family or a spouse, or other personal roadblocks. Luckily, when it comes to get ready for class, all these stressors magically disappear. Right?

Wrong, of course. It would be ideal if, indeed, all other problems vanished, but we know they do

not. Fortunately, even if the problems and stressors themselves do not disappear, we will easily get them off our minds once it is time for lecturing. Right? Wrong again. At best, this is wishful thinking. The fact is that, while some people are effective at blocking out other stressors, many people tend to take their baggage with them into their activities, including lecturing.

There is a fundamental problem to this, however: whatever that other issue might be, you are not going to solve it while in front of the in class. Furthermore, the external stress might make your lecture worse than otherwise it could have been (which, in turn, often results in more stress). Most students are quick to realize when their professor is not fully invested in lecture, as that is when lectures come across as lackadaisical and lacking in focus.

Our main recommendation in terms of stress management is thus quite simple: once the pre-lecture stage arrives (again, 5-30 minutes prior to the lecture) make a deliberate, conscious effort to set all other sources of stress aside. The benefits of this approach are astounding. While it can be challenging to do at first, make a point to consider your lecture (and pre-lecture) intervals to be your own sacred times of peace, intellectual stimulation, and student engagement. Regardless of what may be happening with that grant, with conflicts with your co-worker, or with having to do grocery shopping or mow the home lawn, those problems are not going to be solved right now. Right now you are a teacher. You are going to be the most important person in the room. Your students deserve to get all of you, not just part of you. Focus on them. Give them this time.

The more time and conscious effort you spend on this, the easier it will be to do. The mind becomes conditioned to consider the pre-lecture and lecture time special and impervious to external distractions. This in turn provides you the opportunity to conduct better lectures, which will get you more excited about the lecturing process itself. It is a positively reinforcing feedback loop.

Bottom line: During the pre-lecture stage, set all other stressors aside. You can deal with them some other time. Now is your time to shine in front of the classroom.

## Focus area #2: Pre-lecture “Prepping”

Most new faculty members know that, during our first years, preparing for lectures (“prepping”) is the activity on which we are likely to spend most of our hours. We have probably also heard that, as you teach a course a second or third time, there is less time devoted to prepping, as well as about the risks of both underprepping and overprepping. What is relevant to our discussion here is how the *timing* of prepping, particularly in the context of the pre-lecture stage.

The main recommendation we can offer is that, whenever possible, you try to be finished with your lecture prep *before* the pre-lecture stage. Once the pre-lecture stage has begun (in this case we recommend somewhere in the 20-30 minutes prior to the lecture range), make it a point to put all your notes away. Your notes are ready for the lecture. The rest of the time should be devoted to making sure *you* are ready to enter the Performance Zone.

While it might sometimes be harmless to give the notes a quick glance during the pre-lecture stage, quite often it can lead to increased anxiety, to second-guessing yourself, and to psyching

yourself out of the confident feeling that you know the material well. This is something you definitely want to avoid, particularly as a new instructor.

Some instructors are initially hesitant to not look at their notes prior to class, often stemming from insecurity about delivering the material effectively. But it is especially in these cases that the pre-lecture stage should be reserved for activities other than preparing or refining lecture notes. Chances are, your students believe that you are doing your job well and will issue you respect based on your authority. To them, you are the most important, highest-ranking person in the room. Thus, remember that the pre-lecture stage should not be a period of anxiety and second-guessing, but an opportunity to increase personal confidence.

Bottom line: Whenever possible, avoid prepping during the pre-lecture stage.

Focus area #3: The use of role models for pre-lecture craft development

Quite often, when you are around people who are actively debating an issue, you will find that your mind has, without any conscious effort, shifted to a “debating mood,” even if you were not initially involved in the debate. If you then begin a conversation with a friend, you are likely to want to engage in debate. This does not just apply to in-person conversations, but, for example, to political or sports debate shows on TV or radio. Additionally, if there are any speakers or debaters we particularly admire, we are bound to, consciously or not, emulate their body language and delivery.

Similarly, when one attends a lecture, particularly by a talented speaker, or when one witnesses a lecture on TV or on the internet, it is not uncommon to find your mind shifting to a “lecturing mood.” This is especially true for faculty members: when we see others explain material to an audience, we become inclined to do so ourselves. Furthermore, we can learn about body language, content delivery, and lecture pacing by analyzing the work of talented speakers.

The practice of routinely watching videos or attending other lectures so as to hone your own craft is very valuable, but it may be particularly so during the pre-lecture stage. Indeed, there may be no better time during the week for your brain to get into a “lecturing mood” and take on the qualities of a lecturing role model you admire. While it may be unlikely to find a guest speaker or admired colleague who happens to be lecturing in your building during the hour prior to your own lecture, there are plentiful resources online with videos of quality lecturers, from professional, discipline-specific websites to general video vaults. Keep in mind that here the subject matter is less important than the delivery. So, during the pre-lecture stage, feel free to close the door to your office and spend ten minutes listening to an instructional lecture on a topic that may be unfamiliar to you.

As you continue this practice over time, you will find some speakers become your favorites. Not only that, but you may discover that some of your favorite speakers share a number of traits. Identify these traits and try to apply to them to your own lecturing. In time, you will craft your own lecturing style, but you should always remain open to positive influences from other gifted lecturers.

Another positive is that, even when you watch a video by a speaker who is not particularly talented, your mind is still likely to shift to a lecturing mood. Additionally, you will identify the speaker's weaknesses and unconsciously make an effort to avoid them when you perform your own lecture.

Bottom line: Use the pre-lecture stage as an opportunity to watch and learn from lecturers you wish to emulate.

#### Focus area #4: The value of pre-lecture socialization

While it might not be immediately obvious, lecturing is, fundamentally, a social activity: through a lecture, we are communicating with other people, transmitting a message we want them to retain. Furthermore, the more engaging we are, the more interested the other party will be, and, in turn, the more material they are likely to retain. We also need to pick up on visual and auditory cues from our students so as to, for example, pay special emphasis to parts of the lecture which are unclear or to lead a discussion on a topic.

As with most activities, we are going to be more effective at socializing when we have "warmed up." In sports, for example, athletes will perform basic calisthenics and stretching prior to the actual competition. Similarly, singers will practice scales, particularly in the morning, before diving head-on into a challenging vocal performance. In this same vein, it may be very valuable to "warm up" socially during the pre-lecture stage so as to help us enter the performance zone. The way to do this is simple: engage another person in conversation. As with the warming up in other activities, this social activity does not need to be particularly intense or demanding. It is simply a way for your vocal chords to get moving and to get you in tune with communicating a message and reading another person's reaction. So, a simple conversation with a colleague, a student, or a staff member during the pre-lecture stage could go a long way in improving your lecturing energy.

Now, as with other aspects discussed in this article, the scheduling of your classes might prevent you from socially warming up as effectively as you would like. In particular, if the classes are early in the morning, it might be difficult to find people around the office with whom to converse. However, in particular during these challenging schedules, it may be especially important to seek the opportunity to do so, as it is during these times that your students are going to be the least social and probably most difficult to engage. Once again, remember that even a brief conversation can provide an effective social warm-up, so make a special effort to seek out brief conversation with a colleague or with your family prior to leaving for work.

Bottom line: Whenever possible, do not let lecturing be the first talking you do during the day. Rather, warm up socially by engaging another person in conversation during the pre-lecture stage.

#### Focus area #5: Pre-lecture nutrition

In the realm of sports, there has been much research about how to achieve the Performance Zone, in particular regarding how to be at peak physical shape at the time of the competition.<sup>6,7</sup> One of

the key factors in achieving the Performance Zone for athletes is to pay special attention to pre-performance nutrition. For example, if an athlete has just had a large meal an hour prior to a soccer game, it is bound to negatively affect his performance in the match. While lecturing is not as physically intense as playing a soccer game or running a 10-kilometer race, it is nevertheless a physically rigorous activity. The instructor needs to stand with good posture, walk around the room, and project his or her voice with sufficient volume. It is thus important to consider the pre-performance nutrition for an instructor.

The number one step we recommend is examining your schedule: is your class scheduled right after lunch? If so, you might consider eating a light lunch and make breakfast or dinner the largest meal of the day, as a large lunch is usually followed by a lethargic physical feeling and, in many cases, in an inclination towards napping or resting. Is your class scheduled in the early hours of the morning? If so, make sure to make time for breakfast in the morning. Not having breakfast can limit your energy in front of the classroom. Finally, is your class late at night, close to dinner time? If so, it might be of particular importance to have a small pre-lecture snack, even if you will have dinner later. If you are hungry and your body needs calories, your performance in front of the classroom will very likely suffer.

During the pre-lecture stage, it is important to recognize what physical state your body is in. Very often, due to other constraints, our regular meal patterns may be altered, or we may simply have had a physically draining day. For this reason, it is highly recommended to have emergency snacks in a drawer in your office. There are certain kinds of foods, such as trail mix or granola bars, that are particularly helpful, in that they are healthy and convenient, yet can provide the body with a short term boost it may need to enter the performance zone.

Closely tied to the above, it is also highly recommended that you keep water bottles in your office (or access to a water cooler). Partial dehydration can have various negative effects on the body. Plus, water bottles are convenient to take with you to class in case your throat gets dry during the lecture.

Also, pay close attention to your use of caffeine. The effect of caffeine on the body varies significantly from person to person; however, beverages containing caffeine, such as coffee and tea, can be powerful allies when used correctly. In fact, there have been studies that link consumption of coffee to better physical and mental performance.<sup>12</sup> While excessive caffeine can make one jittery and unfocused, an adequate amount may provide that added boost that has the potential of really benefiting your lecture.

Bottom line: During the pre-lecture stage, evaluate what you have eaten so far during the day, and make sure to have snacks and water handy in your office.

Focus area #6: Pre-lecture meditation, breathing, and body language techniques

There are occasions when other tasks or activities might encroach upon the usual pre-lecture time slot, reducing it to a shorter than average duration (for example, 5-10 minutes instead of 20-30). However, there are simple techniques that can be done in a surprisingly short amount of time which can be enormously beneficial to one's mental state, particularly in terms of letting go of

external stress and anxiety and focusing on the task at hand.

An example of this is to take a couple of minutes engage your body in “power poses.”<sup>8</sup> Research has indicated that adopting certain physical positions (generally involving good posture, a straight back, the chest and shoulders open and relaxed), even for just a couple of minutes, allows people to perform better on high-pressure situations where they are being evaluated, such as interviews and, of course, lectures.

The qualitative effect is verified by the physiological effects that take place in the body. These power poses increase the level of testosterone and decrease the level of cortisol. An increase in testosterone results in an increase in self-confidence and risk-taking, which in turn has the potential to result in more confident, engaging lecturing. Cortisol is the chemical that is related to stress level. In particular, when humans are put into fight or flight scenarios, the cortisol level increases. A decrease in cortisol level is correlated with better management of stress and pressure situations, such as when students ask difficult questions or when leading a discussion with an uncooperative group.

Another recommendation for anxiety-reducing technique is to practice breathing and meditation exercises during the pre-lecture stage. The benefits of meditation can be especially useful to someone with a highly intellectual job: after all, the focus of meditation is on mind training.<sup>13</sup> While the benefits of meditation are maximized when the practice of meditation is a regular part of one's daily life, there are simple meditation exercises which can be performed during the pre-lecture stage. These exercises may allow the instructor to more readily access the Performance Zone. Simply close the door to your office and allow yourself to do these meditations for a few minutes.

There is a wide range of books on useful meditations.<sup>13, 14</sup> We have found these particularly simple and useful:

-Breath-Counting Exercise: This exercise is done by sitting in a comfortable chair, removing distractions from your mind, and counting your breaths up to number four. When you reach number four, start again with number one. If a distracting thought enters your mind, simply dismiss it, and start again from number one. Doing this for even a few minutes should relax you and reduce anxiety.

-Deep Breath Exercise: Simply inhale, slowly expanding your abdomen, filling your lungs with air, and count to four. Then exhale, slowly releasing all the air in your lungs, and count to four. Do this three times. This simple breathing exercise is very useful for reducing anxiety.

-Visualization Exercises: These exercises consist on allowing your mind to see yourself the way you wish to perform. For example, take a few minutes to fully picture yourself in command of a classroom, eloquently speaking to the students, successfully fielding their questions. Immerse yourself in that image for a few minutes. When you move from the pre-lecture stage to the lecture stage, simply let your mind transform this vision into a reality.

These meditation exercises are extremely common amongst athletes and performing artists, and

their effects have been verified in many contexts.<sup>14</sup> They can thus be a valuable addition to your pre-lecture stage repertoire to help you reach the mental and physical Performance Zone.

Bottom line: Explore the idea of incorporating breathing, meditation, and power pose techniques into your pre-lecture routine.

#### Focus area #7: The role of sleep

It might initially seem surprising to include the topic of sleep in this article, as intuition would suggest that sleeping during the pre-lecture stage may not be the best idea. However, we felt it necessary to explore this topic, as sleep plays a critical role in entering the performance zone. Studies have shown that depriving ourselves of even a couple of hours has a significant effect on our intellectual and cognitive abilities. Lecturing is an intellectually rigorous and demanding activity that necessitates focus and attention to detail, qualities which are reduced due to lack of sleep.<sup>9, 10</sup>

First, let us make this clear: indeed, we do *not* recommend that you take a nap during the pre-lecture stage. Doing so may cause you to fail to wake up and be late to your class and, even if you do wake up in time, a nap will make it more difficult for you to enter the performance zone.

The first step we do recommend is the recognition of the sleep deprivation. What we mean by this is the following: if you are feeling particularly lethargic or lacking in energy throughout the day, particularly during the pre-lecture stage, take a moment during the pre-lecture stage to think about the previous night. Did you have difficulty sleeping? Having difficulty sleeping is not an uncommon problem for faculty members, and it can be due to a variety of reasons, ranging from late night work to meet a deadline for a grant, to being kept up by a crying baby, to everyday work-related stress.

As may be surmised, simply identifying that one is lacking sleep will not immediately reenergize the body or solve the problem. However, the identification of the problem does have some immediate benefits: many faculty members are prone to blame themselves or get frustrated when they are lacking in energy or focus, but cannot find the reason. Being able to pinpoint the origin of the problem allows the faculty member move on and attempt the best possible job at the upcoming lecture.

The following step is to identify whether the previous night's sleep deprivation was an anomaly or part of a pattern. If it was an anomaly, it is more easily correctible. If there is a pattern, however, make it a point of emphasis to identify the causes of your lack of sleep. There are ample resources online on steps that one can take to remedy sleep deprivation. If the sleep deprivation persists, see a doctor. Chronic insomnia can have long term negative effects not just on work performance, but on overall health.

Bottom line: If you are feeling lethargic during the pre-lecture stage, examine your recent sleeping patterns and, whenever possible, make the necessary changes to your patterns for the remainder of the week.

## Focus area #8: The post-lecture reward

Initially, it might appear this section explores a technique that does not fall into the realm of the pre-lecture stage, as the recommended activity takes place after the lecture. However, we felt it necessary to include this section because effectively setting up a post-lecture reward may help the faculty member enter the performance zone. The main idea is as follows: after your lecture is finished, give yourself a small reward. If you make a habit of this, your body will begin to anticipate the reward even prior to beginning the lecture. By setting up a concrete reward schedule, as your body and mind get ready for the task at hand, they also begin to anticipate the treat afterward.<sup>11</sup>

It is very important to allow yourself to enjoy the post-lecture treat regardless of how “well” or how “poorly” the lecture may have gone. At this point, it is irrelevant whether you were at your most eloquent, whether you covered all the material you hoped to, or whether your students were participative, quiet, or frustrating. You can deal with those issues later and correct accordingly. However, right after the lecture is done, you have every right to reward yourself: you just spoke to a class full of students for an hour. That alone is a remarkable accomplishment.

As for what form this reward will take, this is entirely up to you. We recommend for something that gives you gratification but is convenient.

For example, here are a few ideas:

-Take a trip to the coffee shop and buy yourself your favorite tea or coffee drink. This is usually not expensive, and it may serve as a satisfying follow-up to a lecture.

-Keep small chocolates or candies in a special drawer in your office, and only open that drawer or space after a lecture.

-Allow yourself to take a stroll around campus. Most college campuses are beautiful and have pleasant wooded areas and walking paths. Walks of this nature can be both relaxing and revitalizing.

-If you enjoy exercising and your schedule permits it, this might be a good time to head to the gym. Allow yourself to fully enjoy the exercise.

-Finally, seek out leisurely conversation. You can arrange to meet up with a colleague to meet up if his or her schedule allows it, or simply call your spouse or a friend on the phone for a brief chat.

Bottom line: In order to more easily enter the performance zone, allow yourself to indulge in a small reward after each lecture.

## Conclusions and future work

In the future, we would like to delve more deeply into the specifics of the implementation of

each the areas previously mentioned. While the guide provided in this paper is meant as an overview, it would be of interest to do studies to empirically test some of these within the context of pre-lecture. For example, we can survey faculty members on how many of these pre-lecture practices we mentioned they already do, ask them that they consciously put at least one of them into practice for, say, a semester, and then survey them on whether they see improvements in their teaching.

We do want to emphasize that, as with other kinds of performances (arts, athletics, etc.), the advice presented here is most effective when personalized to fit each faculty member. In other words, for the information in this guide to result in maximum benefits, you have to make it work according to your own strengths and weaknesses, as well as your own circumstances and schedule. While many of the points we provide are general enough, it is important to spend time discovering how to make the specifics really work for you: some recommendations may not fit you, while others might provide extremely positive results.

Furthermore, the most important “future work” is not going to take the shape of academic research. Rather, the most important work is going to be done by you, the reader, by putting these recommendations into practice and allowing yourself to confidently enter the Performance Zone. If you feel that your own lecturing has been improved or re-energized, we enthusiastically welcome you to give us feedback. We would like to know which recommendations have been most beneficial, as well as if you have found new ones you. After all, it is one of the primary goals of the engineering education community to help each other become better teachers.

## References

1. Bligh, D. *What's the Use in Lecturing?*, San Francisco, Jossey-Bass (1998).
2. Hodgson, V. “Learning from Lectures”, *The Experience of Learning*, Edinburgh, Scottish Academic Press (1984).
3. Filene, P. *The Joy of Teaching*. Chapel Hill, NC, The University of North Carolina Press (2005).
4. Ruhl, K. et al. Using the Pause Procedure to Enhance Lecture Recall, *Teacher Education and Special Education*, 10, (1987).
5. McKeachie, W. Improving Lecturing by Understanding Students' Information Processing, *New Directions for Teaching and Learning*, 2, (1980).
6. Krane, V. A practical application of the anxiety-athletic performance relationship: The zone of optimal functioning hypothesis. *The Sport Psychologist*, Vol 7(2), 113-126 (1993).
7. Prassaveis, H. The POMS and Sports Performance: A Review. *Journal of Applied Sport Psychology* (2008).
8. Carney, D., Cuddy, A., and Yap, A., Power Posing: Brief Nonverbal Displays Affect Neuroendocrine Levels and Risk Tolerance, *Psychological Science* 21 (10), (2010).
9. Alhola, P. and Polo-Kantola, P., Sleep deprivation: Impact on cognitive performance, *Neuropsychiatr Dis Treat.*, 3(5), 553–567 (2007).
10. Lo, J.C., et al., Effects of partial and acute total sleep deprivation on performance across cognitive domains, individuals and circadian phase, *PLoS One*, 2012;7(9):e45987. doi: 10.1371/journal.pone.0045987 Epub 2012 Sep 24.
11. Wise, R. and Rompre, P. Brain Dopamine and Reward, *Annual Review of Psychology*, Vol. 40, 191-225 (1989).
12. Colgan, M., *Optimum Sports Nutrition: Your Competitive Edge*, Advanced Research Press, 1st edition (1993).
13. Wallace, R.K., Physiological effects of transcendental meditation, *Science*, 167(3926), 1751-1754 (1970).
14. Davidson, R. et al, Alterations in Brain and Immune Function Produced by Mindfulness Meditation, *Psychosomatic Medicine*, Vol. 65, no. 4, 564-570 (2003).