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Column Editor

summary

This column is part 2 of a series on bridging the gap between science and practice in the profession of strength and conditioning. Using a group of leading practitioners and a group of scientists active in the strength and conditioning field, a round table format will be used to discuss specific questions on the practical application of science to practice.

Question: For today's strength and conditioning specialist what type of academic and professional training can optimize a young person's chances for success in the field in the 21st century?

Jill Bush: For a young individual, optimizing success in the field of strength and conditioning (S & C) today requires knowledge. Keeping up-to-date with the

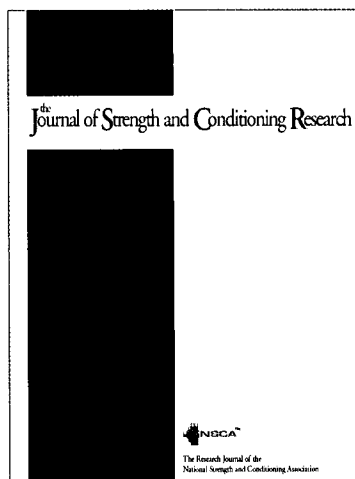
changing information that is available through applied research, reading research journals, and attending conferences and sport-specific workshops is important to success. Many young individuals enter this field because they participated in athletics and S & C activities throughout their youth. However, this is only a start. The knowledge in this field is always evolving with the design of new training techniques and equipment to enhance performance. It is important that young individuals consider acquiring their education through accredited degree programs (such as kinesiology-based or related degrees). It would be beneficial if the degree program had faculty who are also certified strength and conditioning specialists (CSCS). To further their education, it is crucial to attend sport-specific training workshops and conferences not only to interact with other specialists in the field but also to enhance their knowledge base on the latest training techniques that are avail-

able. However, knowledge of techniques is not the only requirement for success. The young professional must have the opportunity to apply this knowledge in order to acquire further skills. This can be done through internship programs (either paid or unpaid) with reputable CSCSs. Interns learn such skills as inter-

action and etiquette with clients or athletes, different techniques of training, and sport-specific training. Finally, whether you are a coach, personal resistance exercise trainer, or teacher/professor, becoming a member of a reputable society such as the National Strength and Conditioning Association (NSCA) will promote the acquisition of knowledge of the latest

training techniques and foster networking with experts in the S & C field.

Steven Fleck: As with all professions the knowledge base necessary for success in the S & C field is dramatically increasing and changing. The increase in research in the area of S & C which re-



sults in an increase in the knowledge base is important if S & C is to be viewed as a profession. All professions have a knowledge base, otherwise there is no profession and respect for the profession will be minimal. Because a knowledge base is necessary, preparation to practice the profession of S & C is necessary. In my view preparation should include an undergraduate degree and possibly a Master's degree in a related health, physical education, or sports science field. It is also necessary for the S & C professional to have knowledge of the practical aspects of the field, such as training individuals and exercise technique. An individual well prepared for the S & C profession should have some type of internship or practical experience as part of their preparation.

Jay Gump: Today's S & C specialist requires a combination of formal training and practical experience. Historically, the most successful practitioners have trained not as scientists, but as mentors in great athletic programs. These specialists intuitively address issues critical for success, thus popularizing the concept of "the art of coaching." Such coaches are quick to recognize when expert consultation (e.g., with a sport psychologist) may facilitate the journey towards a given goal.

However, with new information available daily in the scientific literature, it is increasingly important that modern practitioners have a working knowledge of the science underlying their profession. An undergraduate degree can provide the basics of nutrition, physiology, psychology, and program implementation. Pursuing extracurricular research or an advanced degree may ensure that a coach learns to critically evaluate scientific literature. Beyond the basics, today's practitioners must be sufficiently trained to continue their education independently.

The end goal for any practitioner remains the application of theory. Just as

medical doctors complete a residency prior to independent practice, an S & C specialist should plan to complete practical training in a setting that puts current theory to productive, practical use.

Jay Hoffman: For entry level positions an undergraduate degree in exercise science with at least one extended experience as an intern should provide an opportunity for the young S & C specialist to attain an entry level position such as an assistant S & C coach at a small school, a coaching position at a private training facility, or a graduate assistantship. Experience as an athlete provides an advantage, however it is the ability to teach and coach that provides the sustainability in the profession.

To attain a full-time position, and compete for a head coaching position the student will likely need to earn a graduate degree (Master's) in exercise science with experience as a graduate assistant or other full-time S & C coaching experience. In addition, to receive a full appreciation of various training paradigms it would benefit the student to obtain some experience in an exercise science laboratory that is active in research involving competitive athletes.

To enhance the likelihood that the educational experience for the S & C specialist is maximized the student can enroll in an academic program that is an Educational Recognition Program from the NSCA.

Terry Housh: Success can be defined in multiple ways. For an S & C specialist, success can be described in terms of the success of the athletes that are being coached, and professional success for the S & C specialist. While they are often related (professional success often follows coaching successful athletes), they require somewhat different approaches. Coaching athletes to success requires a thorough knowledge of the scientific bases of S & C. This can best be obtained from a rigorous and diverse sci-

ence-based college curriculum with applied practicum opportunities. In addition, professional success often requires specialized certification(s) and networking with other professionals. These two forms of success often overlap due to practicum opportunities with established S & C coaches.

Coach Joe Hughes: The S & C specialist should have advanced degrees in exercise science with supporting courses in nutrition, biomechanics, biochemistry, analysis of research writing, and advanced anatomy and muscle physiology. Also beneficial is professional training in the field that allows young people to gain experience with not only the training of individuals and groups of athletes but with the design and organization of training schedules, daily player reports, player evaluation and testing, and maintenance and care of a training facility.

Coach Jerry Martin: For a young person's chances for success in the S & C field for the 21st century, I look at a number of academic experiences as well as professional experiences. With academic training, we look at a Master's degree in a sport performance field. This may include but is not limited to exercise physiology, kinesiology, nutrition, or other fields of sport performance. We are still teachers and motivators, and the effort that the S & C specialist puts forth should be maximized toward the health and well being of the athlete, and the enhancement of sport performance. Not only is it important how we teach, but what we teach should be based on good research and facts. We also look at candidates who have a variety of training experiences. The different modalities of weightlifting, powerlifting, agility, speed development, and other sport performance variations gives the strength professional a number of training alternatives to use with athletes who are limited by equipment or time. These training experiences can be gained by student volunteering, internships, graduate assistantships, and working in different

environments of the S & C field. Experience plays a major role in determining the best training modality to fit into the best training situation.

Coach Mike Nitka: In Wisconsin, most people working with the athletic teams have a teaching license and accept the S & C program as an extra curricular contract, thus giving them an advantage over a college graduate without a teaching license as the teachers unions/administration hire qualified teachers first.

Areas of study that would help prepare them for the high school field include physical education, health education, athletic training, nutrition, sport psychology, and computer science.

Coach Steve Plisk: The three-pronged approach recommended in the NSCA *Strength & Conditioning Professional Standards & Guidelines* is a good place to start:

- **Education.** Acquire expertise, and have a degree from a regionally accredited college/university, in one or more of the topics comprising the Scientific Foundations domain of the CSCS *Content Outline*, or a related subject. Likewise, make an ongoing effort to acquire knowledge and competence in topics outside your main area of expertise.
- **Certification.** Acquire professional certifications with a continuing education requirement as well as a code of ethics (e.g., CSCS). Depending on your specific duties, responsibilities, and interests, relevant certifications offered by other organizations may also be appropriate.
- **Experience.** Enhance your knowledge and skill development by applying the "performance team" concept, aligning a staff of qualified professionals with interdependent expertise and shared leadership roles. While more experience is usually better, it is also important to optimize its quality.

The NSCA Educational Recognition Program (ERP) recognizes universities and colleges that meet the requirements in the first point. Students attending these schools should be required to gain practical (e.g., internship) experience while studying a sound curriculum. Consequently, they should be well prepared for the CSCS exam, which they can take during their senior year. In my opinion, a solid education should be the first step on everyone's career path.

Upon completing their undergraduate degree, students can apply to graduate schools recognized by the ERP, and seek graduate assistantships in the field. The NSCA Student Assistantship Program is a valuable resource here because it serves as a referral system to a network of professionals who have achieved the Coach Practitioner distinction.

Throughout this process, I recommend attending professional events (e.g., clinics and conferences) whenever feasible, seeking guidance from one or more mentors, and generally doing as much networking as possible. Be realistic about the qualifications most employers seek (e.g., Bachelor's degree required, Master's degree preferred, CSCS, 3 or more years of full-time experience). Keep in mind that you are always being evaluated by potential employers, and are effectively marketing yourself at all times. Everything you say and do is a reflection on you as well as the institution you represent.

Coach Meg Stone: The S & C profession has become so diverse that it is difficult at times to define exactly the roles and responsibilities of the S & C professional. The NCSA itself has branched out and become so diverse that our association encompasses everything from a personal trainer/athletic trainer to anyone remotely interested in the physical condition of any individual. These comments will be addressed from the understanding I have of the collegiate S & C coach.

Academically, it is important to understand the science and the art of coaching. From the science aspect, there must be a deep understanding of the science behind the coaching methodology; otherwise a coach can spend a great deal of time involved with ineffective coaching methods. The ideal approach would be to have the potential coach do undergraduate work then complete his/her Master's degree in exercise physiology while studying under an expert in the science of the field.

Mentoring under a knowledgeable S & C professional is crucial. The beginner coach must be encouraged to find his/her own coaching style and knowledge of the science of the field and not coach simply using workouts and methods of coaching that are mimicry or "coaching the way I was coached."

In the S & C profession, like so many other professions, it is often the case of not so much what you know as who you know. It is still the case at the collegiate level that many of the S & C professionals come from football or some other well recognized collegiate sport such as track and field. The athlete/interested person establishes a relationship with the strength coach or sport coach and is encouraged to pursue the field as a career by their role model and/or love of a particular sport. Ideally then the potential S & C coach is directed to undergraduate and graduate programs that will enhance the understanding of the science of the profession. Having established contacts through camps, clinics, national conferences, and mentoring situations the beginner coach will now have the science background and the contacts he/she needs to enhance their chances for success in the field.

Michael Stone: It depends on what is meant by S & C specialist. If they are simply interested in S & C from a personal training/health benefits standpoint a good basic science and exercise

science background is necessary (along with the basics of S & C). For the personal trainer, it would also be useful to include some sport management and facilities courses. For the personal trainer a short (at least a semester) internship with an established personal trainer would be quite useful. For the S & C coach a year-long internship with an established coach is a necessity.

Becoming a good coach is much like becoming a good medical doctor. A good physician will strive to obtain a science background so that they can better practice the art of medicine; a good coach likewise will obtain a good scientific background to better practice the art of coaching. A scientific background provides a basis to direct training in a more purposeful manner toward specific goals. Indeed, the scientific background enables the coach to make choices about training (and competition) that might not be possible otherwise.

Unfortunately, in the United States, there are currently few university programs specifically geared toward producing coaches with an adequate sports science background (and none for sports scientists). The typical university program leading to a coaching degree, if it exists at all, is more geared to one introductory class in the scientific basis of coaching, one or two sports management courses, and an inordinate number of classes on how to teach. There is typically little or no work offered concerning testing/research design, measurement, concepts of training, and almost nothing at all on specific aspects of S & C. One of the weakest areas of current coaches' education deals with the importance of athlete monitoring and how to implement/integrate testing/monitoring of athletes into the overall training program. Some of the national governing bodies, such as swimming and track, have coach education programs that are quite good and do in fact help fill in the gaps left by inadequate preparation in the university system. So the S

& C coach would do well to consider taking the coaches' education programs offered by national governing bodies such as USA Track and Field.

Coach John Taylor: The *Strength & Conditioning Professionals Standards & Guidelines*, Section 2 (Personal Qualifications) addresses 3 major components that should be satisfied in preparation for a career in the profession. In brief they are

1. A Bachelor's or Master's degree from a regionally accredited college or university acquired in a relevant content area.
2. A CSCS credential or comparable credentials from another governing body acquired and maintained through a required continuing education program.
3. Knowledge, skills, and abilities should be further enhanced through practical experiences preferably as part of a performance team.

Although not part of these guidelines, study in administration/management as well as educational pedagogy is beneficial to the development of a well rounded professional. Finally, it would serve aspiring new professionals to become a member of the leading professional organization like the NSCA and attend national and local conferences.

Coach Jon Torine: I think having a degree in an exercise science-related major is the foundation to build upon. From there, internships and graduate assistant training are critical in establishing mentors and developing relationships. This will help you grow professionally while also enhancing technical skills. Professional memberships in associations such as the NSCA and American College of Sports Medicine will help keep you current in the field. This happens in several ways. First, it is important to attend seminars and lectures that will allow you to leave with current scientific information that you can apply to your working situation. Second, it is an opportunity to hear

and meet people that share similar working environments. Also, you can get to know professionals that can become necessary contacts to answer questions for you. Finally, reading the research journals is critical to what you are doing today and what you will be doing in the future.

N. Travis Triplett: A good theoretical background is very important, so seeking a degree program with a specialty in or at least some preparation in S & C is optimal. However, many potential employers expect the young S & C specialist to have some practical experience prior to entering the workforce. Therefore, completing an internship or even volunteering in a S & C facility to get experience will greatly enhance one's chances of employment.

Coach Al Vermeil: I think being a physical education major with a strong influence of exercise science would help a young coach. When I refer to physical education I can only refer to how it was taught when I was in college. We had to take classes in all of the sports. All of these theories and methods classes were taught by the head coaches. The benefit of being a physical education major is that you study methods of teaching the various sports, which in turn should help you understand the subtle differences that you have to design into your programs. I find students who have only majored in exercise science do not understand the various aspects of each sport. Generally, physical education majors are also taught how to organize large groups and they student-teach.

Even if they were not an athlete in college I think it is very beneficial for them to coach a sport at some level. Observing or coaching a team sport (e.g., football) will teach you how to handle large groups and to coach on the run. In team sports you cannot spend all day verbalizing and learning to coach on the run. Observe or coach an individual sport, e.g., track and field or weightlifting. This will teach them biomechanics.

Once they have attained their degree, the best education is to work under the guidance of an experienced strength coach. I find many of today's students (exercise science majors) do not have any practical understanding of training. Some of these classes should be taught by former coaches who understand the real world setting.

Darryn Willoughby: A solid academic background in the basic and applied exercise sciences along with supporting preparation in basic statistics, such as tests and measurements, and nutrition is critical. In addition, a solid background and practical experience in the area of S & C involving program design and implementation, emphasizing sport specificity, testing, and evaluation, and the ability to teach and educate athletes in various aspects, such as correct lifting technique, is necessary. A supporting professional certification such as the CSCS that helps represent the individual's competency in critical areas of S & C is advisable. ♦



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