

Tips from the Professionals

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What does it take for young professionals to succeed in science? The answer is complex and highly variable. In this column I provide a few personal observations and opinions for you to consider. I do not presume that my advice is ‘evidence-based’; but rather my own, perhaps biased, viewpoints. These comments are directed to graduate students, post-doctoral scholars, and junior investigators; and are intended for those interested in becoming independent investigators rather than for those interested in clinical careers, an area in which I have limited experience. The comments below are not arranged in any particular priority order, but represent somewhat random thoughts on the topic.

Read Broadly

It probably goes without saying; but a necessary, although not sufficient, requirement for scientific success is to read broadly in your own and related areas of interest. At a comparable stage of my own career 35 to 40 years ago there were fewer than a half a dozen scientific journals that included original research in exercise science, and most of these were quarterly journals. Today there are several times that number of journals that include original research reports on exercise related topics and the number of articles published each year has increased exponentially. Similar expansion of publication outlets has occurred in other areas of research relevant to young investigators in NAASO. The explosion of material in our respective areas of interest makes it more difficult to stay abreast of key developments. It is however crucial that you discipline yourself to devote sufficient time to scouring the literature. I also encourage you to not neglect reviewing historical material on topics that interest you. You may be surprised to learn that 40 years ago someone investigated a question that currently interests you, and might have had some very relevant observations to help you. It takes precious time to become and remain thoroughly familiar with a rapidly expanding area of science, but I think it is highly important that one meets this objective. Fortunately electronic search capabilities available today make it much easier to do this today than in the past.

Cultivate Mentors

Each of you likely has a mentor that helped launch your scientific interests. I encourage you to expand your list of mentors throughout your career. As your interests evolve you will need advice and consultation from individuals with additional areas of expertise. In my opinion, most of the accomplished investigators in areas related to preventive medicine, clinical medicine, and public health are quite approachable and are willing to share their ideas and expertise. I recommend that you not be shy about talking with them at scientific meetings or contacting them by email messages, which is generally less intrusive than telephoning. Here are a couple of tips on how to initiate contact. For example, be specific with your questions. I sometimes get queries such as

“Please tell me about the health effects of regular physical activity”. This question is far too broad, and I may not be very responsive to such a general question, which indicates to me that the person has not thought very much, or read very widely, about what they are doing. If on the other hand, someone asks, “I cannot find published studies on the relation of cardiorespiratory fitness and risk of stroke. Are such studies available?”; I will be more responsive and try to help. Another tip is to be sure that you have thought through your question or request for assistance. Do not take the time of busy investigators if you are still formulating your research question or study plan. You will find them more responsive if you show evidence that you have been working on and thinking about the issue.

‘Right Size’ Your Research Question

Often beginning investigators seem to have difficulty in defining a research question or topic that is the ‘right size’. By that I mean that sometimes the question borders on, or perhaps crosses the line of, being trivial. These fill in the smallest gaps in knowledge, and are not very important in advancing the field. Suppose that a given treatment has been demonstrated to be effective in several diverse studies. One of the easiest research questions is therefore to find another population in which to test the efficacy of the treatment, although this may not be very important. For example, one might evaluate the effect of weight loss on blood pressure in a group of left-handed, short, blue-eyed, elderly nuns. I doubt that such a study has ever been conducted, but I feel confident that it would not advance our understanding of the effects of weight loss. At the other end of the spectrum is the global question that is far too broad, and better serves as the overall direction for a research career than for a specific study. An example of this could be a very broad question on the effects of obesity on health.

Question Established Wisdom

I have often told young researchers in search of a topic to try to find an issue that ‘everyone knows is true’. Not infrequently, you may find that ‘established clinical wisdom’ or ‘rules of thumb’ actually have little data to support them. A good example is the current issue of the causes of the obesity epidemic. You can find passionately held opinions that ‘super-sizing’ is a major culprit. This may indeed be true, but I do not think that there is much empirical data in the peer-reviewed literature that supports the hypothesis. It is clear that super-sizing has occurred, at least in the U.S.; but the role that this has played in the obesity epidemic lacks compelling evidence. If super-sizing in fact is important to the obesity epidemic, we can direct interventions and policies to address the issue. On the other hand, if super-sizing is found to be unrelated to the increasing prevalence of obesity, we should not waste our time trying to change this broad trend. A broader issue relates to the overall role of diet in the obesity epidemic. Is the obesity epidemic due primarily to individuals increasing their average daily caloric intake, or is it due to declining average daily energy expenditure? Although most opinion probably supports the ‘increasing caloric intake’ hypothesis, in my view this is not clear from the available data. I think this is an important issue that deserves more investigation, because it seems to me that the fundamental strategies for addressing the epidemic would be quite different depending on the relative contributions of increased energy intake or decreased energy expenditure to the problem.

I am excited about the future of the areas of science encompassed by NAASO. There is an ever-expanding pool of bright and creative young investigators entering these fields, knowledge is growing in all areas, new areas of investigation are developing, and current levels of funding are at least adequate to support important studies. I hope that the ramblings presented here will be of some value to those in the early stages of their research careers.