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## A Tribute to Richard A. Schmidt: And So He Did!

In the last issue of *KT*(fall 2015), shortly after his death, we published a short self-authored description of Dick's life. In this issue I want to follow up and solicit some ideas from individuals who have come in contact with Dick over the years. Here are just a few thoughts from notable individuals. Dick was quite a competitor at many levels: race car driver, sailor, researcher. I currently live on a boat and am around the sailing and racing community. When some sailors had just sailed into the bay from Southern California, I asked, "Do you know Dick Schmidt?" I received a resounding "Yes, he is quite a sailor! Eight bells to you!"

-PMc



Richard A. Schmidt

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## A Tribute to Richard A. Schmidt



Tim Lee

**Tim Lee**, professor emeritus, McMaster University (coauthor with Schmidt on books), Fellow of the Canadian Society for Psychomotor Learning and Sport Psychology (SCAPPS), and

International Fellow of Academy of Kinesiology (NAK)

Tim directed me to a publication that he had just written with some colleagues that will appear in early 2016 in the *Journal of Motor Behavior*. In this memoriam a number of active researchers recall Dick's contributions to the research literature, his significant leadership role in starting the *Journal of Motor Behavior* in 1969, and a little about his personality. To get further appreciation of Dick's personality I would suggest you read his memoir, *So I Did*, published in 2015. If you ever had contact with Dick, you may be mentioned in his renderings!

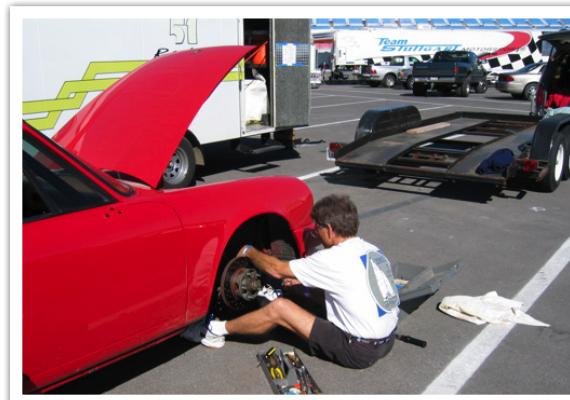


Gaby Wulf

**Gaby Wulf**, Professor, UNLV, President of the North American Society for the Psychology of Sport and Physical Activity (NASPSPA)

*How did you first become aware of Richard Schmidt and do you recall when you first met him personally. Reveal a little about your interaction. What was your role (e.g. student, post doc, colleague).*

When I was a doctoral student in sport sciences in the mid-1980s (German Sport University, Cologne) and searching for a dissertation topic, I kept reading articles related to motor learning in hopes of finding something that would interest me. I eventually came across "Schema Theory" (Schmidt, 1975) and was fascinated! I then continued to search for



studies that tested schema theory predictions, and I became well versed in this area of research. In 1984, I found out that Dick Schmidt was going to be at the symposium "Action, Attention, and Automaticity" at the Center for Interdisciplinary Studies (ZiF) in Bielefeld, Germany. I decided to go and see my hero in person. It was most exciting to see him present (and other people whose names I had seen on papers). After the session, I gathered up all my courage and went up to him. Because I was still looking for a thesis topic, I asked him what was new with respect to schema theory. He mentioned the challenges contextual interference was posing to schema theory. I ended up designing a study for my dissertation along the lines of what I thought Dick had in mind. In 1986, I was fortunate enough to be able to join Dick's lab at UCLA as a postdoc. Our first joint project was a study that actually examined what Dick had in mind. The paper ("Variability in Practice: Facilitation in Retention and Transfer Through Schema Formation or Context Effects?") was published in the *Journal of Motor Behavior* in 1988.

When I arrived at LAX in the summer of 1986 for my postdoc, Dick picked me up in his (first) red Porsche. During our drive to his house, I remember that he pointed out a very old car and told me that cars last forever in California because they don't rust. I thought that was so interesting! It soon became clear to me that Dick was a car fan.

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## A Tribute to Richard A. Schmidt

This is perhaps why he didn't mind taking me all the way across Los Angeles—aside from his being unbelievably nice and supportive in every possible way—to check out a 1963 Plymouth Valiant I had seen in an *LA Times* ad. He approved of it, and I bought it for \$600. Many years later, in 2003, Dick and Gwen came to Las Vegas for a car race in which Dick participated. I met them at the Las Vegas Motor Speedway and watched. I was impressed by Dick's skills as a car mechanic and race car driver (see photos). Dick actually let me drive his race car around the track during the lunch break. Shifting gears in that car was quite different than it was in other cars and was very difficult. I stalled that car many times! But I was grateful for the experience—and so many others with which Dick provided me and had a tremendous impact on my life.



Ian Franks

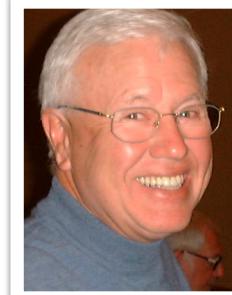
**Ian Franks**, Professor at UBC, Fellow of SCAPPS, and International Fellow of NAK

My first encounter with Dick Schmidt's work was in 1975. As a new master's student

with Bob Wilberg, we were given Dick's *Psych Review* paper "A Schema Theory of Discrete Motor Skill Learning" (now cited 2790 times) to read, review, and discuss at Bob's weekly seminar. For a new graduate student who had just come from teaching high school physical education, this was quite a challenge and one I would not forget. Since that time the paper's relevance to my own and others' work in our field has persisted perhaps more than any other theoretical paper explaining how people learn motor tasks. In fact, in 2013 (38 years after publication) I organized my own seminar (along with Romeo Chua, Nikki Hodges, Dana Maslovat, Keith Lohse, and all of our graduate students) on Dick's schema theory and its seemingly unrecognized influence in recent publications that propose internal models as a possible control process for skilled movement. We were shocked at the lack of acknowledgment Dick's paper had received despite the many similarities between these recent models and schema theory. As always after reading Dick's work we left the seminar with more questions than answers. But to paraphrase Michael Posner, the world is full of answers but what we require are good questions. In all of his writings Dick generated many good questions. At the end of the seminar we agreed that perhaps we should make the 1975 schema theory paper required graduate reading along with the likes of the works

of Lashley, James, Henry, and Woodworth.

Since 1975 I have met and discussed many aspects of my work with Dick. However, my most enduring memory of him is at early NASPSPA conferences where he would regularly present his "new" ideas. Then at the following meeting many papers were presented that tested his theories and hypotheses. At one of these meetings (Asilomar, I think) I recall Bob Wilberg remarking to me that Dick leads the field from the front and the rest follow in his wake: "He makes the rest of us resemble the phalanx of mediocrity." Quite a compliment!



Ron Marteniuk

**Ron Marteniuk**, Professor Emeritus at Simon Fraser University, Fellow of SCAPPS, International Fellow of NAK, and distinguished scholar of NASPSPA

I first met Dick at Berkeley when I was working under Franklin Henry. Dick had decided not to take his doctorate with Franklin, but every summer while I was there he made a point of visiting Berkeley and sitting in on Franklin's seminars. He and "Doc" would butt heads frequently during these seminars and I soon appreciated why Dick chose not to work

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## A Tribute to Richard A. Schmidt

under Franklin for his doctorate. We became good friends at this time and remained so until his passing. I lived with him and Gwen for 6 weeks while I taught a summer school seminar at UCLA and then Dick and Gwen spent part of a sabbatical when I invited him to the University of Waterloo. During our time together there was no doubt in my mind that Dick was without peer in our field of motor learning and had few peers in terms of quality and quantity of publications in the human sciences area in general. He had a way of taking complex issues and decomposing them into questions he could answer through experimentation. I learned a great deal from him, and he'll be sadly missed by me and, I'm sure, by all who came in contact with him.



Mike Wade

**Mike Wade**, Professor  
University of Minnesota,  
Distinguished Scholar NASPSPA.

What a sad loss! Dick was a graduate student when I arrived at Illinois in 1966. He was in charge of the compulsory PE classes

then offered to all students. I remember Dick hand entering all the data ( $n=1000+$ ) to calculate the Henry Specificity Lab. It always came out low,  $r = 0-2!!$  Of course we never ran enough trials to show that the correlation would increase quite rapidly over time; but then Franklin was GOD! For some he maybe still is?

Dick was one of a kind, enthusiastic about his Triumph TR4, trying not to get upset with Fritz Hubbard; a stickler for writing, and getting fellow grad students enthused about timing behavior -his first love. Both Mike Ellis and Dick and I were swept up in the Jack Adams inspired "Operative Time Estimation" that led to Ellis ,Schmidt and Wade (1968). Dick was kind, hard driven on things he enjoyed and immensely generous and kind both as a scholar and a friend. I miss him very much but have fond memories.



Karl M. Newell

I first met Dick Schmidt albeit briefly at a conference in the early 1970s but our first real substantial encounter was strangely without

him present. I was at my dissertation proposal meeting at the University of Illinois when Jack Adams as a member storms in and on arrival throws on the table a manuscript – it was the soon to be published in JMB Schmidt and White (1972) paper. Adams says as the manuscript comes to a halt on the table – have you seen this Karl? I had not and, on reflection, this was the first of what turned out to be many contexts through the 70's where Dick and I were drawn to work on the same issues – Adams theory, schema theory, impulse variability – with usually me following. We danced around (though not always in step) these and related topics for a decade and more. The schema theory and impulse variability contributions were and still are landmark papers that have sustained his influence in the field at large over the years and even though he moved on at an early career stage from academe to industry and business.

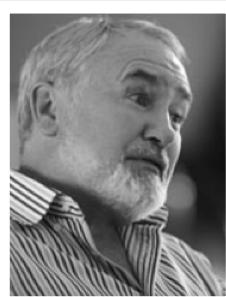
Dick was always supportive of my work and me as an individual through both my graduate student and early professorial career years. I have long been grateful of and benefited from his generosity of ideas, intellect and professional support. Dick had a clarity of view of motor learning and control that he sought to test with what he viewed to be simple experiments – indeed, I can still hear him singing the virtues of the counter intuitive finding. He was an experimental

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## A Tribute to Richard A. Schmidt

psychologist at heart. I had and still have the feeling that he really enjoyed what he was doing and achieved in the 70's.

The field of motor learning and control is substantially different today than it was in 1969 and Dick's contributions have been as a collective a major force for the early stages of this development. That Dick Schmidt could start the Journal of Motor Behavior as a graduate student at Illinois is a reflection of his special capacity and importance to the field at large. One of the best things we could all do to remember Dick is to support JMB as authors and reviewers.



J A Scott Kelso

*recognized as a Distinguished Scholar by NASPSPA.*

**J.A. Scott Kelso**, founder of the *Center for Complex Systems and Brain Sciences* and the *Glenwood and Martha Creech Eminent Scholar Chair in Science* at Florida Atlantic University. Kelso has been rec-

### So We Did

In the mid-1970s Dick and I got together sometimes. As a young professor I invited him to Iowa City to give a week of lectures on schema theory and the motor program idea, and Dick kindly accepted. We hung out together and Dick delivered five brilliant lectures and wrote them up for an undergraduate text on human motor behavior. We roomed at Psychonomic Society once or twice. I'll never forget Dick packing his suitcase. He showed me how to fold a shirt and, by doing so, to compress space in a suitcase. I've done it Dick's way ever since. That was Dick. Orderly mind, orderly body. I remember at one of these meetings I presented a test that Pat Norman and I had done of Dick's schema theory—the variability of practice prediction—with very young children. Sure enough, variable practice was much



Photo provided by John Shea

better than repeating the same skill over and over. And the effect was even greater with young kids. Someone in the audience remarked, "Wouldn't you expect that kids prefer variation over repetition?" I said that science is not about armchair speculation. You have to get into the lab and actually test theories experimentally, which is what we did. Dick was in the audience and he told me later that he really liked that. His theory of discrete motor skill learning was based on the notion of schema and, along with some data in support of his theory, he offered research paradigms, techniques, and predictions that needed to be tested. So we did.<sup>1</sup>

<sup>1</sup>I borrow the phrase from Dick Schmidt's memoir **So I Did**. On September 23, 2015, Dick sent me an e-mail: "I have finished my memoir and I am giving a copy to all those involved. We should be mailing it early next week. Please let me know where to send it." I did. And a week later he was gone.

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Lee. T.D., Wulf, G., Weinstein, C.L., Howard N. Zelaznik, H.N. (2016). In memoriam: Richard Allen Schmidt (1941–2015). *Journal of Motor Behavior*. DOI:10.1080/00222895.2016.1124687

Published online 23 Dec 2015.

Schmidt, R.A. (2015). *So I did*. Lulu.com.

## PRESIDENT'S MESSAGE

# The American Kinesiology Association Provides Valuable Resources

By Mary Rudisill, AKA President



Mary Rudisill

of kinesiology through training, education, and advocacy. My goal is to continue the work of my predecessors, Duane Knudson (president) and Penny McCullagh (past president), who have both served and continue to advance our field through their dedication to AKA.

AKA continues to provide excellent resources for our members, including our annual workshop for department heads and chairs. I have benefited from the workshops and know of many others who feel the same. The annual workshop allows the leadership in kinesiology to meet and share strategies for success and ways to advance our discipline. It also promotes

With great enthusiasm, I look forward to the upcoming year serving as the president of the American Kinesiology Association. I personally value AKA's commitment to being a resource for leaders in the field

a unified, informed group of kinesiology leaders dedicated to advancing our mission. The January 2016 workshop titled "Innovation and Entrepreneurship in a Time of Shrinking Budgets" informed leaders in kinesiology about strategic approaches to managing budgets and generating revenue. I am confident that all attendees benefitted as much as I did from the presentations, rich discussions, and conversations with other kinesiology leaders. Our leadership has many members who are having great success at their own institutions and want to share their ideas with others. I was pleased to find other leaders who had similar issues at their institutions and found solutions to their problems that may apply to my own situation.

Other valued AKA membership resources are the 2015 AKA salary report with more than 150 participating kinesiology programs; *Kinesiology Today* magazine; *Kinesiology Review* electronic journal; AKA webinars; a variety of kinesiology white papers; best practices for promoting diversity, career center, graduate program, and assistantship listings; and AKA annual Student Awards. I

encourage all AKA members to revisit our website at [www.americankinesiology.org](http://www.americankinesiology.org) and take advantage of all the resources AKA has to offer its membership.

Over the next year, AKA will continue to serve as a valued resource by focusing on issues in institutions of higher education that directly relate to kinesiology. The 2016 AKA workshop covered the topic of budget management. The 2017 workshop will address the topic of how kinesiology can build strong relationships with campus entities and programs such as athletic departments; campus recreation and intramural programs; and academic relationships such as health sciences, biological and natural sciences, and business. It is critical that our leadership be informed of the most important factors influencing our success as an academic discipline. AKA is committed to that mission.

Future AKA workshop topics and AKA initiatives will continue to tackle real-world issues facing kinesiology today. There are several common issues in higher education that AKA membership may want to address or continue to address in the near

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## The American Kinesiology Association Provides Valuable Resources

future. According to *Inside Higher Ed*, an online news source, the hottest topics today in higher education that should involve kinesiology are mental health on college campuses and in our communities, continued promotion of online learning, and increasing diversity among faculty and student bodies. These institutional topics are being addressed by upper administration on college campuses through setting priorities and dedicating funding sources. Leaders in kinesiology need to be prepared to contribute to solving these types of institutional issues and priorities on campuses by taking advantage of the available resources to address these issues and promoting kinesiology's mission. As we forge through the next year, AKA plans to ensure that our leaders in kinesiology are aware of the most important issues and help prepare our leadership for the future.

I look forward to the upcoming year and working with the membership of AKA to advance our field and promote all that kinesiology has to offer.

## National Scholar Awards Open for Nominations

The AKA Scholar Awards provide member departments with the opportunity to showcase the academic and leadership accomplishments of their students. Nominations this year must be submitted by March 1, 2016. Since 2010 AKA member departments have had the privilege of submitting nominations for Undergraduate and Graduate Scholar Awards and a Writing Award. These annual awards honor a select number of students from member departments who have been screened and recommended by the faculty in their departments and are intended to recognize and promote academic excellence. In addition to focusing attention on member departments' most exceptional students, the AKA accepts nominations for competitive awards: National Undergraduate Scholar Award, National Master's Scholar Award, National Doctoral Scholar Award, and National Graduate Writing Award. These award winners will be chosen by the AKA Awards Committee for each category. All nominations submitted by the March 1 deadline are eligible for consideration for the national award.

## No Football for Children! No Hockey, Either?

This is America. Who would say that children should not play such a popular game as football? A recent survey cited in the *Huntington Post* (April 16, 2015) says football has surpassed baseball as the all-American pastime. If we do not let children play, how will we ever fill the professional leagues with players?

In a December 7 article in the *New York Times* Opinion pages, Dr. Omalu, forensic pathologist and professor at UC-Davis, said because of the risk of brain damage, children should not be allowed to play football. Omalu is the physician who conducted the autopsy of Pittsburgh Steelers player Mike Webster and subsequently labeled a new disease he calls chronic traumatic encephalopathy (CTE). His discovery and subsequent discussions have not always been met with laudatory comments. For an interview with Dr. Omalu, visit [www.pbs.org/wgbh/pages/frontline/sports](http://www.pbs.org/wgbh/pages/frontline/sports). A film starring Will Smith was released on Christmas Day 2015 and highlights some of the work conducted by Omalu. In his *New York Times* article Omalu says laws in the United States have been constructed so that children do not smoke or drink alcohol. He suggested that based on the evidence, parents, teachers, and



lawmakers should make rules that protect children in contact sports.

Supporting some of these ideas, a January 8, 2016, study published by Kontos and colleagues in *Pediatrics* examined concussions in 397 youth hockey players in more than 23,000 games and practices. They

reported 37 diagnosed concussions and found that more than 40% of the injuries involved illegal play. While the authors noted limitations in their own research, they did suggest that some rule changes may be necessary in order to eliminate high risk in youth.

There has certainly been heightened attention in the news about concussion in sport. It is unlikely that we will see immediate roadblocks for playing this and other contact sports, but research is certainly on the upswing. To see recent research approaches, check out a recent special issue from a kinesiology perspective that examines concussion from pediatric, sports medicine, psychological, philosophical, and athletic training perspectives (Weiss, 2015). It would be interesting to return in 20 years and see if this research has made an impact.

-PMc

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Omalu, B. (December 7, 2015). Don't let kids play football. *New York Times*.

Weiss, M.R. (2015). Introduction to special issue: Concussion management in sport. *Kinesiology Review*, 4, 129-130.

# Both Who You Are and What You Do Determine Weight Loss

By Duane Knudson, AKA President

It's that time of year again and many of us are making New Year's resolutions: "This is the year of the body. I will lose weight." Fitness clubs have a huge influx of customers in January; many people join with the idea that they will exercise, get fit, and lose weight. However, statistics tell us that many folks do not adhere to their well-planned exercise goals, and many of those who strive and are successful in losing weight inevitably gain the weight back.

An extensive research review published in January 2016 by an NIH working group sought to determine some of the important issues surrounding weight loss and whether your genes or your environment and what you do were the most critical factors surrounding weight. They cited several family studies to support their contention that your genetic makeup contributes about 50% to

your weight. Family studies use direct comparisons of either twins and non-twins or family members and non-family members in examining this issue. Based on a review of these data, the authors suggest that weight gain and loss may be due somewhat to genetics and not self-control. Given that, it might be that if overweight individuals knew that weight loss was not entirely due to their own poor life choices, they may be more motivated to stick with a specific program based on their genetic makeup.

-PMc

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Bray, et. al. (2016). NIH working group report: Using genomic information to guide weight management: From universal to precision treatment. *Obesity*, 14(1) 14-22.

<http://onlinelibrary.wiley.com/doi/10.1002/oby.21381/abstract>

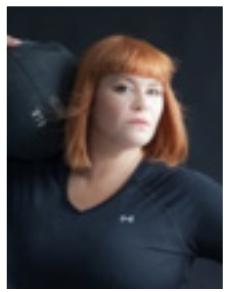


## Overweight But Don't Like to Work Out With the Lucy Lycras?

The concept is not new but is gaining new interest. In the early 1970s fitness guru Richard Simmons, who was overweight himself, moved to Hollywood and opened fitness classes for overweight individuals. Not only were the participants overweight, but many of the instructors were as well. Today Simmons continues to push this same concept as well as being an advocate for physical education in the schools. Check out his website to see what he is up to:

[www.richardsimmons.com/site/index.php](http://www.richardsimmons.com/site/index.php).

A recent article by Zeidler on CBC news brings renewed interest to fitness classes for plus-sized people. She details some information about Louise Green, busi-



Louise Green

ness owner and plus-sized athlete. Louise started her own fitness business because she wanted to serve as a role model for other large women. She indicated that fitness magazines and commercials rarely show plus-sized athletes. To support her statements, Zeidler cited quotations from kinesiology researchers at University of British Columbia Okanagan. Dr. Mary Jung from the Health and Exercise Psychology Lab suggests, "What keeps people continuing to exercise is feeling confident and owning their identity as an exerciser." Thus, working out with people who are similar may help keep people motivated.

-PMc

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Zeidler, M. (January 9, 2016) Plus-size fitness classes offer long-term health benefits, say experts. CBC News.

[www.cbc.ca/news/canada/british-columbia/plus-size-fitness-health-benefits-1.3396061](http://www.cbc.ca/news/canada/british-columbia/plus-size-fitness-health-benefits-1.3396061)

# Can Physical Activity Become Too Much of a Good Thing?

By Patrick Wade, KT Staff Writer

There's no question that physical activity is good for the body, says Radboud University Medical Center researcher Dr. Thijs M.H. Eijsvogels, but those benefits may plateau at higher levels of activity. More than half of U.S. adults fail to meet the recommended 30 minutes of daily moderate-intensity exercise or 75 minutes per week of vigorous exercise, Eijsvogels wrote in a viewpoint article in the November issue of the *Journal of the American Medical Association*.<sup>1</sup> "More work needs to be done to get people exercising," Eijsvogels said. But there is another extreme, too. Although it does not appear to be harmful, healthy people who exercise 10 or more times the recommended activity levels might not be seeing additional benefits, according to his analysis of peer research.

Studies show that, to a point, more physical activity will reduce mortality rates. In a Taiwanese study of 416,175 people, even those who exercised for 15 minutes per day had a 14% reduced risk of death over 13 years and had a life expectancy of three additional years.<sup>2</sup> Every additional 15 minutes of daily exercise further reduced mortality rates by 4%. In U.S. and European stud-

ies, Eijsvogels wrote, people exercising at three to five times the recommended levels reported the lowest mortality rates over 14 years. But beyond that, the benefits appear to flatten. In those same studies, mortality rates reported by individuals exercising at up to 10 times the recommended levels were comparable to those in the group exercising at 3 to 5 times the recommendations. That does not necessarily make higher doses of exercise bad, Eijsvogels said. Higher doses seem to be at least as effective as more moderate doses.

"Indeed, our analyses reveal that high doses of vigorous exercise do not further reduce the mortality risk compared to lower doses of vigorous exercise," he said. "However, this observation does not suggest that high volumes of exercise are harmful for healthy athletes. In fact, a recent publication combining data from six American and European study populations demonstrated that exercise doses up to 10 times the 2008 Physical Activity Guidelines effectively reduce the risk for mortality. Thus, for healthy individuals, there is no evidence of adverse outcomes related to high doses of exercise training."

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## Can Physical Activity Become Too Much of a Good Thing?

So what about people with health problems in their histories? Although there are significant limitations in the research, the lower doses may be optimal. In patients who had survived a heart attack, death caused by cardiovascular issues was reduced over 10 years in people who exercised 8 to 24 minutes per day versus their non-active counterparts, Eijsvogels' analysis found. Data from the Cooper Institute, he wrote, showed that lower doses of high-intensity exercise—in this case, 7 minutes per day—reduced cardiovascular mortality. But there were no additional mortality benefits in patients who ran 51 or more minutes per week.

In fact, some studies found that cardiac patients who complete high volumes of high-intensity exercise showed mortality rates comparable to that of nonactive cardiac

patients. That warrants further investigation, Eijsvogels said. "These data suggest that higher doses of moderate-intensity physical activity are related to larger health benefits, whereas physical activity beyond the lowest effective dose for high-intensity exercise is not associated with further reduced mortality rates." Eijsvogels said he encountered studies that suggest physical activity at levels on the high end of the spectrum may be harmful as compared to moderate levels and produce mortality rates similar to those of nonactive individuals. The studies he encountered are "definitely flawed," he said, and should be interpreted with care. "The majority of studies suggest a stabilization of the risk at the higher end of the exercise spectrum. In other words, high doses of exercise do not further decrease the mortality risk, but do not elevate the risk either. Also, it is known that elite athletes live longer than less active individuals. Therefore, I do not believe that high doses

of exercise could deteriorate our long-term health outcomes." Eijsvogels has not explored whether there is an optimal dose of physical activity, but he said maximal benefits appear to be present in people who exercise at about three to four times the recommended levels.

The takeaway, though, is fairly simple: "Our review confirms the belief that exercise is a potent medicine for most of us."

1 Eijsvogels, T, Thompson P. Exercise Is Medicine: At Any Dose? *The Journal of the American Medical Association*. 11/2015;314(18):1915-1916. doi: 10.1001/jama.2015.10858.

2 Wen CP, Wai JP, Tsai MK, et al. Minimum amount of physical activity for reduced mortality and extended life expectancy. *Lancet*. 2011;378(9798):1244-1253. doi: 10.1016/S0140-6736(11)60749-6

For more on extreme exercise see this Ted Talk by cardiologist James O'Keefe: Run for your life! At a comfortable pace, and not too far. [www.youtube.com/watch?v=Y6U728AZnV0](https://www.youtube.com/watch?v=Y6U728AZnV0).

# Intra- or Interdisciplinary Research, Teaching, and Service in Kinesiology

By Penny McCullagh, KT Editor

As the new editor of *Kinesiology Today*, I am interested in expanding the uses of *KT*. Since AKA membership is department dependent, I would also like to include unique or interesting activities that individuals in kinesiology departments are doing. In days gone by, some would argue that the best way to build a department was to hire extremely talented researchers who could independently make a name for themselves. Typically these individuals operated as silos (thanks to Scott Kretchmar for the analogy) and did their own research primarily independent of other faculty members. The more prestigious the individual research, the higher the silo. However, today, many department heads, deans, provosts, and even funding agencies would argue that some level of cooperation and interdependence is a more meaningful and effective way to approach research.

An article by Schary and Cardinal (2015) on inter- (IRD) and intradisciplinary (ITR) research and teaching is not a new conversation for kinesiology (see many previous works, including Freedson, Kretchmar, Newell, Weiss, and Rikli). However, the

concept of collaborative research is being pushed to the forefront of many discussions for several reasons, including funding priorities from external sources and the ability to cooperate with other researchers to answer real-life questions in a multidisciplinary field and to enhance teaching effectiveness. Schary and Cardinal argue that there is little information in kinesiology about the amount of IRD being conducted and also the challenges of doing such research. Many universities are advocating such approaches demonstrated by a recent host of cooperative hires (called affinity hires and cluster hires) that require up to three departments to hire faculty that can approach common research themes from different perspectives.

Schary and Cardinal offer the following two definitions and suggest that while disciplinary research should not be abandoned, taking on a broader approach "will produce better research and better prepare practitioners for the complicated challenging job of working with people."

According to Schary and Cardinal (2015), IDR research "is any study or group of studies from two or more distinct academic

disciplines. The research is a synthesis (or derivative) or concepts, models, and/or theoretical frameworks from those disciplines, uses study design and methodology that is not limited to any one discipline, and requires the use of perspectives and skills of the involved disciplines, throughout multiple phases of the research process (i.e., research, analysis, and interpretation of results)." In contrast, ITR research "is any study or group of studies from two or more distinct subdisciplines within the same parent discipline. The research is a synthesis (or derivative) of concepts, models and/or theoretical frameworks from those subdisciplines, uses study design that is not limited to any one subdiscipline, and requires the uses of perspectives and skills of the involved disciplines throughout the multiple phases of the research process (i.e., research, analysis, and interpretation of results)" (p. 177).

As a former department chair, I was well aware of the ITR efforts of three junior faculty members from my own institution, CSU East Bay, Jenny O (JO), Jennifer Sherwood (JS), and Vanessa Yingling (VY), to push the boundaries of collaborative research

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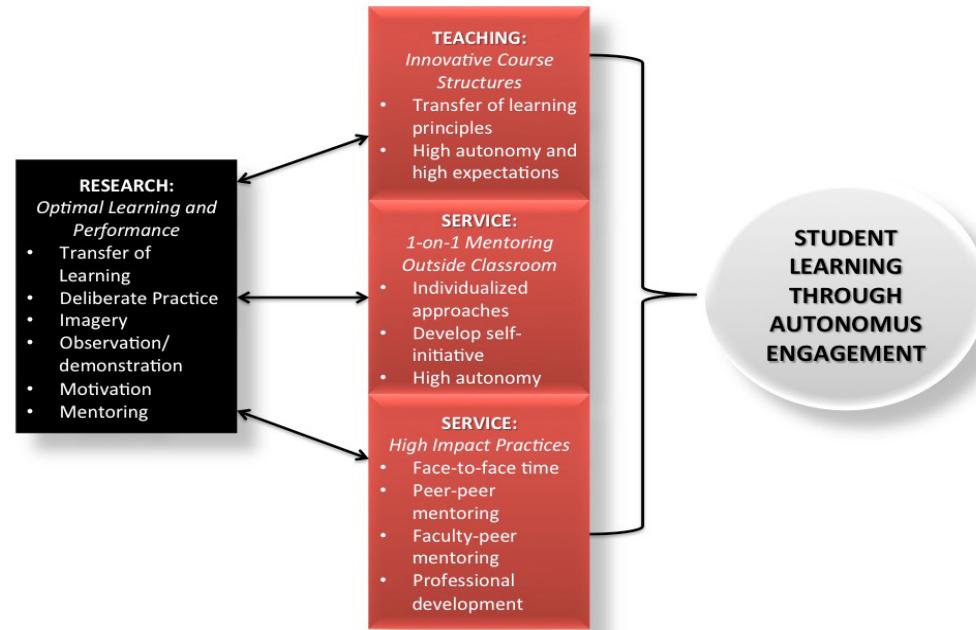
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## Intra- or Interdisciplinary Research, Teaching, and Service in Kinesiology

and attempt to cross-pollinate their teaching and research efforts as well as their service. Two years ago these three individuals formed a kinesiology research group (KRG) in an attempt to bring undergraduate and graduate students at a comprehensive teaching-intensive university under their wings. I asked the following questions and have noted their responses. I would like to receive other examples from other campuses that are showing how cooperative projects can be beneficial not only for faculty but also for students.

### Tell us in general about the teaching, research, and service requirements at your university.

Three assistant professors responded to this question and all agreed that at a comprehensive teaching intensive university such as CSUEB teaching loads are high and research requirements in last few years have escalated. The culture has definitely changed. The typical load is three courses in each of three quarters, or nine courses a year. New faculty with active research agendas and desires to engage with students are coming to the



campus, and although there are programs to purchase equipment and some options for course buy-out, it is still difficult to maintain an active research program. Also, the quarter system (10 weeks) makes it difficult to initiate and complete projects with students because of the shortened time line. One faculty member (JS) said, "I believe that the best option is to integrate all three expectations, thereby maximizing the use of time and resources and avoiding the tendency to compartmentalize these expectations."

**Given the expectations at your university, do you make any attempt to cross-fertilize projects across the three domains of teaching, research, and service?**

**JO:** Yes. To achieve balance and success in pursuing my professional responsibilities, I make deliberate attempts to integrate my teaching, research, and service work. This allows me to work more efficiently and effectively because progress in one area (e.g., completing a literature review for a manuscript) typically informs progress in another (e.g., identifying potential modi-

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## Intra- or Interdisciplinary Research, Teaching, and Service in Kinesiology

ficiations to course structure, content, or delivery). In the following figure, I present a conceptual model of the framework that drives the majority of my work at CSUEB. I find it useful in helping me make professional decisions, especially when faced with situations wherein multiple behavioral options exist. Following this framework also allows me to be focused with my teaching and professional development pursuits as well as consistent with the belief and values I express to my students.

**JS:** In our department, we have tried to integrate teaching and research in the kinesiology research group (KRG). The KRG is a group of faculty and undergraduate and graduate students who meet on Fridays to work on research projects and department projects and attend professional seminars. Last year, several of the students in this group were involved in collecting preliminary cardiovascular, muscular, skeletal, and psychological data of nearly 100 student-athletes. The students were involved in every stage of the project: conceptualizing and designing the projects, collecting and analyzing the data, and presenting the results at a national meeting. In

theory, this was a brilliant way to integrate teaching and research. In practice, it was a significant challenge for a few faculty to manage over 15 student researchers, collecting data on more than 100 participants using equipment and space that are shared for teaching, athletics, and research.

### **Are you aware of scholarly writings regarding intra- and interdisciplinary work, and have any of these influenced your approach?**

**JO:** Yes, some, but I haven't had time to read many of them. I do find Newell's work surrounding the issue to be consistent with my approach, but more so, my approach is informed by my own experiences as an undergraduate student. In terms of how I use research, theory, and evidence to conceptualize my approach, my approach has largely been informed by the transfer of learning literature from the educational psychology domain and my specific areas of expertise in kinesiology: optimal performance (via manipulation and control of cognitions, perceptions, and behaviors) and group dynamics. I tend to try to understand things as models. I visualize (or literally draw out) DVs, IVs, and latent and observable variables—and the relationships between them—and use that model to drive my designs.

**JS:** I am aware of the targeted use of funding opportunities to promote interdisciplinary research, but I am unfamiliar with scholarly writings on interdisciplinary research. In kinesiology, an integrated, translational approach to studying physical activity interventions seems logical. Humans are complex. The research on human movement should integrate this complexity. However, it is difficult to identify appropriate study sections to evaluate inter- or intradisciplinary funding proposals.

### **Please provide a specific example, and can you provide any guidance to other individuals who want to expand their horizons?**

**JO:** Kinesiology is a complex discipline because of its breadth (a broad perspective is necessary, given that we study human beings). Not only is it important to understand the science of movement, but it is equally important to understand the historical, philosophical, and societal underpinnings and current influence on how and why people choose (or choose not to) move. To really understand movement, you need to consider all variables involved. Moreover, from an applied perspective, kinesiology practitioners not only need to understand kinesiology from a

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## Intra- or Interdisciplinary Research, Teaching, and Service in Kinesiology

multidisciplinary perspective, they must then be able to apply it in professional practice (e.g., pedagogy, androgogy). No singular person or subdiscipline can feasibly accomplish comprehensive kinesiology expertise or knowledge; there must be interdisciplinary research in kinesiology if we are ever to go beyond simply identifying and understanding variables affecting movement in a silo-like manner. Movement doesn't happen in a vacuum; thus, how we examine movement also needs to happen outside of a vacuum (down with silos in kinesiology!). If you are passionate about inter- or intradisciplinary research in kinesiology, do it! It is sorely needed. Just plan well, plan often, evaluate and modify your designs (as needed) often, and start small and build from there.

**VY:** Interdisciplinary research should be done, but when road blocks and difficulties occur I think we tend to run back to our familiar areas. At times it feels as if one is pushing a brick wall forward, juggling all job responsibilities whether research and teaching or research and grant writing are not easy.

**JS:** Once you find a project that interests you, find a way to piece it into well-defined, manageable projects for yourself and your students.

**After examining the Schary and Cardinal article, please provide some comments on ideas you might glean for future endeavors.**

**JO:** It seems like we are operating largely from a synthetic IDR paradigm. We link our subdisciplines together but currently do not make attempts to really synthesize them. However, I do not believe that synthesis is necessary. Particularly, in light of the advanced statistical modeling procedures available today, there is no reason why we could not collect data representing various subdisciplines of kinesiology and model them together to identify salient factors influencing aspects of physical activity, health, and wellness. Of course, sample size would be a significant challenge for such an endeavor, perhaps requiring harmonized efforts from multiple researchers and research groups from kinesiology programs across the nation and beyond.

**VY:** The concept of interdisciplinary and intradisciplinary is interesting and imperative if we are to increase physical activity in populations. But the reward system of the universities and the places to publish

such study is limited. And many of us have not been trained in approaching problems in this way. Most of my studies with the main focus on bone health are interdisciplinary, so I have worked with cell biologists (bone focused). To work with disciplines from behavioral or humanities is interesting but harder, I think, although the example of the work in strength and conditioning was excellent. My opinion is if you have departmental seminars and everyone buys into coming weekly, good things will happen. Sometimes you learn the most from a talk that you would never consider attending but it is your weekly meeting so you go. Serendipity....

**JS:** Much of our training to date has been within our parent disciplines so we are working to link our perspectives within the framework of kinesiology, to develop a common language for ourselves as well as for our students. Although this work can be challenging, we know that it is important. As professionals in kinesiology, our students will be expected to seamlessly link concepts across the breadth of kinesiology (e.g., sociological, psychological, physiological, and biomechanical concepts) to develop solutions to understand and promote human movement. Our efforts to develop this framework and model this

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process, thereby preparing our students for the real-world challenges, require us to use inter- and intradisciplinary approaches to research and teaching. Student research and community projects in the KRG include studying physical activity habits in college undergraduates, developing bone health educational materials for community programs, developing individualized exercise prescriptions, and motivating adherence to physical fitness programs. These projects are authentic, are not limited to a single class or a single quarter, and require us to integrate multiple subdisciplines within kinesiology. When students graduate and reflect on their experiences in our department, they report that these integrated, authentic experiences were the most transformative for them, were critical to increasing their confidence and inspiring them, and prepared them for opportunities in the field of kinesiology.

**After completing this article, I decided to approach Schary and Cardinal and ask them for a response. They kindly agreed and provided the following comments.**

As described by the faculty members in this article, the many calls for interdisciplinary research over the years have gone largely unanswered because of practical limitations that constrain faculty who, in order to succeed in the present tenure and promotion system of most institutions, must appropriately balance the classic triumvirate of faculty responsibilities (teaching and learning, research and inquiry, and service and engagement) and navigate a system that has traditionally rewarded independence over collaboration. Ironically, these limitations often stem from the same system that is now trumpeting the importance of interdisciplinary research. We especially commend faculty who have found ways to *do* intra- and interdisciplinary research within the tradition-based system of academic science and professional practice. Their efforts to challenge tradition and create frameworks for others to follow are notable. The informal and serendipitous kinesiology research group established at CSU-East Bay is but one example of the sort of innovation that is inspired by scarce resources (i.e.,

time, money) and a genuine commitment to, in the words of Roberta J. Park, PhD, professor emeritus at the University of California at Berkeley, “The recurring need to put words into action.” As a field, we must embrace, reward, *and* advocate for interdisciplinary research on the same level as disciplinary research. Until this happens, truly collaborative research will never achieve its potential.

Park, R.J. (2011). Historical reflections on diet, exercise, and obesity: The recurring need to “put words into action.” *Canadian Bulletin of Medical History*, 28, 383-4

Schary, D.P., & Cardinal, B.J. (In press). Starting to uncover the mystery of interdisciplinary research in kinesiology. *The Physical Educator*.

Schary, D.P., & Cardinal, B.J. (In press). Interdisciplinary publication patterns in select kinesiology journals. *Journal of Contemporary Athletics*.

Schary, D.P., & Cardinal, B.J. (2015). Interdisciplinary and Intradisciplinary Research and Teaching in Kinesiology: Continuing the conversation. *Quest*, 67, 173-184.

**If you want to share such an example in a future issue, please contact me at [kintodayaka@gmail.com](mailto:kintodayaka@gmail.com).**

# Diversity in Higher Education: How Can This Be?

By Darlene Kluka and Kathryn Ludwig, Barry University, School of Human Performance and Leisure Sciences, Miami Shores, Florida

Colleges and universities in the United States differ in a variety of ways: Public, private, independent; urban, suburban, rural; large (tens of thousands), small (hundreds); minority and majority; religious and secular; graduate and professional programs and undergraduate programs; distinct missions. Many college and university leaders believe that diversity in faculty, students, staff, and administrators enhances the search for truth and knowledge, which is at the core of higher education.

Some researchers (Hofstede, Hofstede, & Minkov, 2010) have ranked the United States at the top regarding individualism. Conversely, collectivism (primary identification with a particular group) rests at the bottom. In contemporary U.S. society, being part of a group or network and identifying with it appear to be important characteristics as well. There is a strong commitment by Americans that life, liberty, and the pursuit of happiness are still sought-after ideals (Gannon & Pillai, 2016). Emphasis on the group, however, does not mean that everyone is entitled to the same results. Americans continue to believe in equality of opportunities but not equality

of outcomes (Parker, 2003).

How, then, do those in higher education assure that future generations of professionals benefit from diversity in education as well as in larger society to attain the best of humanity in the USA? How can diversity facilitate mission fulfillment? Diversity, a multi-faceted term, includes characteristics which, in the authors' view, include gender, physical ability, sexual orientation, experiences, perspectives, age, culture, thinking styles, language, ethnicity, religion, nationality, job level and race. To support this definition, Holoiien (2013) discovered that although working within diverse groups seems more difficult, interacting with diverse individuals is positively associated with greater learning, intergroup outcomes, and community engagement.

Numerous strategies have been discussed in previous *Kinesiology Today* issues, many of which could be used to infuse diversity in a variety of ways. The threads between college and university mission and strategies for diversity must be clearly interwoven into programs, projects, and initiatives in order to achieve an integrated tapestry.

Values must underpin a college or univer-

sity mission. Those values must be evident throughout plans for increased diversity. For example, Barry University's mission is anchored on four core commitments: knowledge and truth, inclusive community, social justice, and collaborative service. These commitments serve as the basis for academic programs; service learning initiatives; and cultural, social, and intellectual diversity through teaching, scholarship, and service. An institution's community must also embrace the constructs of respect for self and for others, equality, interdependence, a global world view, and the development of solutions that promote the common good and a more humane and just society. It should be noted that diversity is a *means* to an outcome: inclusive community.

University, school, department, program, and faculty and staff strategic plans must also indicate the threads that can be woven into the larger tapestry of the university. This includes plans for integrating diversity of gender, physical ability, sexual orientation, experiences, perspectives, age, culture, thinking styles, language, ethnicity, religion, nationality, job level, and race into programs, projects, and initiatives and by assessing

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## Diversity in Higher Education: How Can This Be?

the transformation that has occurred in the process.

The development of a syllabus format for academic course use can further promote diversity. Within the format, each professor must indicate the relevance of the course to furthering development of students through diverse experiences that relate to course and program goals. This can also be reflected in student outcomes from the course and its respective program.

Most important, those who hold positions of leadership at each college and university (from president through program coordinators) must be able to incorporate diverse and glocally\* relevant experiences for students, faculty, staff, and administra-

tors. This includes hiring, retention, and promotion practices; facilities and admissions access; teaching and learning styles; region of origin in the campus community; professional development; and support systems for academic success.

Diversity strengthens communities through a multifaceted perspective: win-win-win. These are the questions those involved in higher education must ask: By the decisions we make and the actions we take, how can I win? How can you win? How can all of us win? The answers to these questions can best be arrived at in a diverse intellectual and social environment. They can encourage critical thinking and help people communicate effectively with those who are different from themselves. In an increasingly complex, pluralistic society, they also can facilitate mutual respect and

teamwork and building communities whose members are judged by the quality of their character and their contributions.

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\*Glocal: global to local.

Gannon, M.J., & Pillai, R. (2016). *Understanding global cultures*. Los Angeles: Sage.

Hofstede, G., Hofstede, G.J., & Minkov, M. (2010). *Cultures and organizations: Software of the mind* (3rd ed.). New York: McGraw Hill.

Holoiien, D.S. (2013). Do differences make a difference? The effects of diversity on learning intergroup outcomes and civic engagement. *Princeton University Diversity Outcomes Report*. [www.princeton.edu/reports/2013/diversity/report/PU-report-diversity-outcomes.pdf](http://www.princeton.edu/reports/2013/diversity/report/PU-report-diversity-outcomes.pdf).

Parker, T. (2003, November 8). A nation apart. The *Economist*, 1-20. [www.economist.com/node/2172066](http://www.economist.com/node/2172066).

# Fighting Back Against Parkinson's Disease

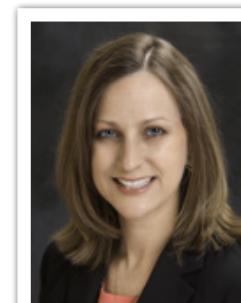
by Amy Rose, KT Staff Writer

A diagnosis of Parkinson's disease can really knock you for a loop. But many are finding a way to fight back against the disease with Rock Steady, a new boxing exercise program that is delivering a knockout punch to the symptoms of Parkinson's disease. Rock Steady was developed in 2006 by Scott C. Newman, a former prosecutor in Marion County, Indiana, who was diagnosed with early-onset Parkinson's at the age of 40. With the encouragement of a friend, Newman began training like a boxer to help battle the disease. Within a short time, Newman began to see improvements in his physical health and daily functioning. Newman told his friend, "I don't have any tremors. I am rock steady," and thus the program began.

In 2011, Rock Steady received an Impact 100 grant from the Impact 100 Greater Indianapolis organization and started a partnership with Peak Performance Fitness Center to build the first Rock Steady gym dedicated to Parkinson's patients. They were also able to hire professional boxer Kristy Rose Follmar to help develop the program. Executive director Joyce Johnson says Rock Steady currently has

80 affiliate gyms across the United States and two international affiliates as well. Rock Steady offers a two-day certification program with four levels of classes for all stages of Parkinson's. The program is intended to go along with other certifications in physical therapy and fitness training.

"Parkinson's is a neurological disorder. There is nothing wrong with your body or your muscles. The brain just isn't telling them what to do correctly," said Johnson. Research has shown that the intensity and variety of boxing training are the key to marked improvement in Parkinson's symptoms. "It trains all the muscles and improves all aspects of the body and fitness," said Johnson.



Stephanie  
Combs-Miller

Stephanie Combs-Miller, associate professor and CHS director of research at the University of Indianapolis Krannert School of Physical Therapy, has done several studies on the effects of the Rock Steady program on the symptoms of

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Parkinson's patients work out at the Rock Steady Champaign facility

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## Fighting Back Against Parkinson's Disease

Parkinson's disease and has verified that the program helps patients improve their physical abilities and maintain a higher level of function than other exercise programs allow. One study followed Rock Steady clients over two years; all participants showed an improvement in function. "They train like boxers train, which involves all types of exercise, total-body involvement, and work in all aspects of fitness," Combs-Miller said. It improves balance, agility, strength, and flexibility in clients who follow the program. Although there is no cure for Parkinson's disease, the high intensity and consistency of exercise seem to be neuroprotective for people with the disease and slows the progression of the disease.

The program improves not only the physical health of patients but also their mental and emotional well-being. Only those with the disease are allowed in the classes, where they provide support and motivation for one another and form a sort of support group through the challenges that come with a Parkinson's diagnosis. It also gives patients a feeling of empowerment and hope, according to Lora Mock, PT, CEEA, a physical therapist with 37 years of experience, who opened

a Rock Steady Champaign affiliate about 5 months ago. "I see the level of motivation they have and it motivates me," she said. Mock says a typical workout starts with stretching exercises to get all of the joints working, especially the spine. Form is very important, especially during the stretching exercises. "It helps with body awareness. They have kind of lost perspective of where their bodies are. Feedback helps get them into the best position and retrain the joint receptors to recognize good posture," Mock said. After a good stretch, they have a short warm-up and then move to the higher-intensity exercises. The program uses training equipment such as agility ladders, exercise balls, stationary bikes, heavy bags, and speed bags. A favorite activity, sparring, uses focus mitts. Clients hit the mitts, which are moved in different directions by the trainer. "I like to mix it up and keep it different," said Mock. "I don't baby them. That's the only way they are going to get better. I am always looking for what they can do next."

Talking with Rock Steady Champaign boxer Darrel King, 53, you find out he is pleased with the results he has seen over just a few months in the program. He has noticed improvement in his gait and enjoys the comradery with the other clients. "I like the variety of exercises, and the adjust-

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Parkinson's patients work out at the Rock Steady Champaign facility

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## Fighting Back Against Parkinson's Disease

ments help me do the exercises right. The repetition is helpful and humor has helped too," said King.

Rock Steady recommends attending classes two or three times a week for best results. They also encourage clients to do stretches and exercise at home as much as they are able. However, as with most of us, the regularity and intensity of in-home exercise usually don't match what you put in at the gym.

Combs-Miller said they are not exactly sure yet about the science behind the ben-

efits of the Rock Steady program, but it is quite obvious that they are doing something right. The same results have not been seen with other types of chronic or degenerative diseases or other types of exercises. Through further research Combs-Miller is hopeful they can find a mode of exercise and a dose of exercise that work for other neurological diseases as well.

In the meantime, Rock Steady keeps pushing the limits of their clients and pulverizing the progression of their disease. Seventy-five-year-old Joyce Fringer, another client at Rock Steady Champaign, has experienced the benefits of the program. After being diagnosed at 48 years old, she says, "People wait too long to do something.

You can't cure it, but you can do something about it and Rock Steady is good for that."

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Combs, S.A., Diehl, D., Chrzastowski, C., Didrick, N., McCoin, B., Mox, N., Staples, W.H., Wayman. J. (2013). Community-based group exercise improves balance, mobility, and health-related quality of life in persons with Parkinson's disease: A pilot randomized controlled trial. *NeuroRehabilitation*, 32(1):117-124.

Combs, S.A., Diehl, M.D., Staples, W.H., Conn, L.A., Davis, K.M., Lewis, N., Schaneman, K. (2011). Boxing training for persons with Parkinson's disease: A case series. *Physical Therapy*, 91:132-142.

## Want More Information on Rock Steady?

Check out this video on Fighting Parkinson's: [www.youtube.com/watch?v=F4Lj6sGMb-I](https://www.youtube.com/watch?v=F4Lj6sGMb-I).

Rock Steady Boxing  
6847 Hillsdale Drive  
Indianapolis, IN 46250

Rock Steady Boxing website: [www.rocksteadyboxing.org](http://www.rocksteadyboxing.org).  
Find a Rock Steady class: [www.rocksteadyboxing.org/affiliate-search](http://www.rocksteadyboxing.org/affiliate-search).

# Writing Dissertation Titles: My Pet Peeve

By Jerry R. Thomas, Dean and Professor, University of North Texas



Jerry Thomas

next graduation exercise go through the titles of theses and dissertations at your institution. Most are too long because useless words are inserted at the beginning. The single most useless phrase in a dissertation (or thesis) title is some version of "The effects of," including "An analysis of," "A study of," "The role of," "The use of." Whatever the title, it reads just as well without some version of "The effects of" and is three words shorter.

You may ask how often a version of the phrase "The effects of" is used in the title.

As dean, I read every dissertation title and abstract that come from the College of Education (including kinesiology) and have been doing so for 8 years. *Titles drive me crazy.* For a rousing good time, at the

A lot. For example, the field of family and consumer sciences is often kind enough to supply a list of titles of theses and dissertations. I took the 2005 listing (Makela, 2006), which indicates 495 theses and dissertations were completed (363 theses and 132 dissertations). I went through the listing and found 106 (21.4%) used some version of "The effects of" in the title. Each one reads perfectly well with "The effects of" removed from the title:

- An analysis of decision making tools for...
- Decision making tools for ...
- Effects of floorplans layout...
- Floorplans layout ...
- Effects of person-centered feed-back...
- Person-centered feedback...

I do not think these results would differ very much by general area of study (i.e.,

kinesiology, education, social science).

Good titles should describe the content of the dissertation or thesis without excessive words. They should not be a statement of the problem, just a description of the study done. Remember, scholars look at titles before they decide to read the abstract or dissertation itself. A bad title often results in the work not being read. Write a good title, one where all of the words used are needed and describe the research.

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Maketa, C.J. (2006). A listing of theses and dissertations completed in family and consumer sciences. *Family and Consumer Sciences Research Journal*, 35 (2), 178-194.

# Adding Up: Exercise May Promote Healthy Brain Development in Children

By Patrick Wade, KT Staff Writer

**E**xercise is associated with enhanced math skills in children, say researchers at the University of Illinois Beckman Institute for Advanced Science and Technology. Previous research has shown that higher-fit kids outperform their lower-fit peers in the classroom, said lead researcher Dr. Laura Chaddock-Heyman. But newly published research offers a clue about the brain differences that might be affecting the performance gap. "Normally, as a child ages, the outer layer of the brain—called the cortex—thins," Chaddock-Heyman said. "We explore the thickness of the cortex in our study. Thinning is a part of healthy brain development, as the brain prunes unnecessary connections and strengthens important connections. Other studies have shown that a thinner cortex is associated with higher reasoning skills."

The group's study is reportedly the first evidence that aerobic fitness may contribute to healthy development of that cortical structure. The research, titled "The Role of Aerobic Fitness in Cortical Thickness and Mathematics Achievement in Preadolescent

Children," in the journal PLOS ONE<sup>1</sup> shows that the key outer layer of the brain is thinner in higher-fit kids than it is in their lower-fit peers, implying that exercise may enhance the process by which the brain develops in children. The findings arrive at an important time, said Chaddock-Heyman, as institutions are cutting or eliminating physical fitness opportunities during the school day in favor of increased academic time. "Our research suggests an important role of aerobic fitness in childhood brain development," she said. "We hope that our results will have an impact on educational policies and that more physical activity will be part of the school curriculum."

For the recent study, researchers recruited 48 children ages 9 to 10 years from East-



Central Illinois. The children were screened for physical fitness; half were at or above the 70th percentile for oxygen uptake—a measure of aerobic fitness—and the other half were at or below the 30th percentile. The children's brains were measured using MRI, and then the group tested their math, spelling, and reading skills. Researchers found not only that the higher-fit kids per-

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## Adding Up: Exercise May Promote Healthy Brain Development in Children

formed better than their lower-fit peers in mathematics but also that aerobic fitness was associated with thinner gray matter in the higher-fit group.

"Here, for the first time, we show that aerobic fitness plays a role in developing cortical structure, particularly cortical thickness," Chaddock-Heyman said. "Our research is the first to demonstrate that the outer layer of the brain in higher-fit kids is thinner than it is in their lower-fit peers—specifically in areas of frontal, temporal, and occipital lobes." And some of the areas that show fitness differences, particularly the frontal cortex, are important for math achievement.

There's no shortage of research that shows physical fitness helps children perform better academically. In fact, Dr.

Charles Hillman, one of the University of Illinois at Urbana-Champaign researchers involved in the study, has published more than 50 papers showing the association. The long-term FITkids study (an acronym for Fitness Improves Thinking in Kids) is in its ninth year investigating the effects of physical activity and aerobic fitness on cognitive and brain health in children. The program offers the opportunity for children in Champaign-Urbana and Tolono, Illinois, to learn the importance of exercise and proper nutrition. Hillman said research has shown that the kids who participated demonstrated better executive control—that is, they had better management of executive functions, like memory, reasoning, and problem solving. And just as classroom attendance affects academic performance, so too did attendance in the FITkids program. "The higher their attendance rate in the after-school program, the better they performed," Hillman said. See <http://engagement.kch.illinois.edu/node/111>.

The recent data about cortical thickness leave some questions unanswered. For one, Chaddock-Heyman said they may have to delve further into why the higher-fit children performed better in math but showed achievement in reading and spelling that was comparable with their lower-fit peers. She said future efforts should be directed

toward identifying other variances in brain structures that may predict scholastic success either in a particular area or across all academic subjects. "Through additional research, we will better understand how both lifestyle factors and neural and cognitive processes account for unique variance in scholastic success," she said. And the researchers have yet to demonstrate a causal relationship between brain development, changes in aerobic fitness, and changes in school achievement. Chaddock-Heyman said she is excited to explore data from their latest research that may help make that connection.

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Chaddock-Heyman L, Erickson KI, Kienzler C, King M, Pontifex MB, Raine LB, et al. (2015) The Role of Aerobic Fitness in Cortical Thickness and Mathematics Achievement in Preadolescent Children. PLoS ONE 10(8): e0134115. doi:10.1371/journal.pone.0134115



Laura  
Chaddock-Heyman



Charles Hillman

## Paralyzed Man Walks Again

A recent case study published in the *Journal of NeuroEngineering and Rehabilitation* demonstrated that an individual paralyzed with a spinal cord injury could use brain control to achieve walking—this was reported as a first! The feat was accomplished by linking the brain via EEG (electroencephalogram) with the lower-extremity prosthesis. Because most individuals with spinal cord injury (SCI) are relegated to wheelchairs, they end up with a host of unhealthy outcomes (e.g., osteoporosis, heart disease, respiratory illness). If such people had the chance for mobility, many of these outcomes could be avoided. While some robotic methods have been developed to help SCI patients with movement, the authors argue that self-controlled movement is a better option. The authors labeled their study a proof of concept study to determine if they could help an individual achieve brain-controlled walking movements.

After reviewing the records of several potential participants, the researchers chose one 26-year-old male who had no function

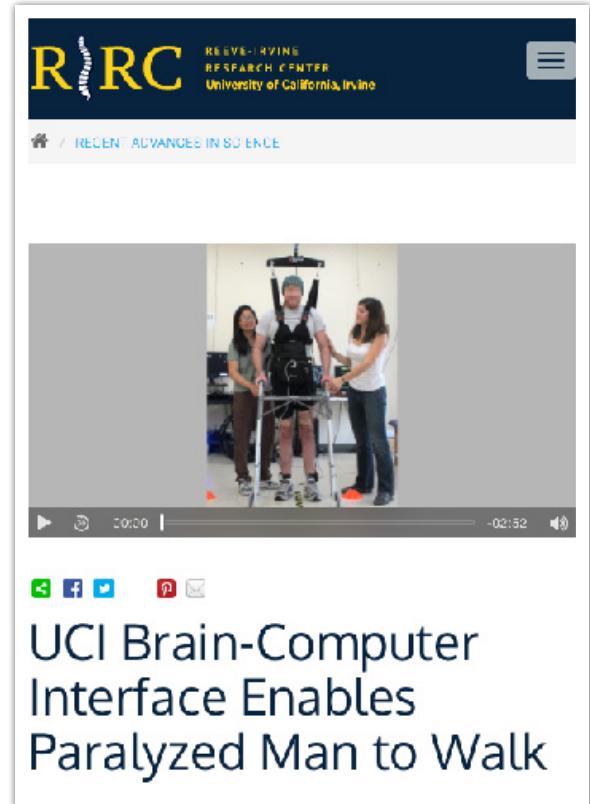
in his lower extremities. The participants underwent brain computer interface (BCI) training, motor imagery practice of walking, FES training (functional electrical stimulation), and strength training for his muscles. The participant trained over 19 weeks and was assessed on dependent measures including suspended walking and ground walking over the next 2-week period. The authors concluded that their “results provide a proof of concept for direct brain control of a lower-extremity prosthesis to restore basic overground walking after paraplegia due to SCI.”

-PMc

To see other work from this laboratory go to UC Irvine: <http://www.reeve.uci.edu/news-detail.html>.

King, C.E., Wang, P.T. McCrimmon, C.M., Chow, C.Y., Do, A.H., & Nenadic Z. (2015). The feasibility of a brain-computer interface functional electrical stimulation system for the restoration of overground walking after paraplegia. *Journal of NeuroEngineering and Rehabilitation*, 12, 80.

<http://jneuroengrehab.biomedcentral.com/articles/10.1186/s12984-015-0068-7>



The screenshot shows the Reeve-Irvine Research Center website. At the top, there's a dark header with the RIRC logo and "University of California, Irvine". Below the header is a navigation bar with "HOME", "RELEN", "ADVANCED IN SENSING", and a menu icon. The main content area features a video player showing a man in a black suit and white shirt walking on a track, assisted by two women. The video player has a play button, a progress bar showing "00:00" and "-02:52", and a volume icon. Below the video are social media sharing icons for LinkedIn, Facebook, Twitter, Pinterest, and Email. To the right of the video, the text "UCI Brain-Computer Interface Enables Paralyzed Man to Walk" is displayed in large, bold, dark blue font.

## Short Shots

### Take a Hike!

Researchers from the London School of Economics suggest that brisk walking may be one of the best exercises for managing weight. They analyzed data from the Health Survey of England from 1999 to 2012. Many forms of physical activity, including walking, sports, and even manual labor, were analyzed as well as body mass index (BMI) and waist circumference. They found that walking was best, sports second, and manual labor third in terms of reduced waist circumference and BMI. The survey data do not allow a cause-and-effect explanation but may suggest that it is worth considering taking a brisk walk.

Lordan, G., & Pakrashi, D. (2015). Do all activities "weigh" equally? How different physical activities differ as predictors of weight. *Risk Analysis*, 35, 2069-2086.



### Take a Pill!

We all know that many people have a hard time sticking with an exercise program and that many people (e.g. those with severe injuries) cannot adequately execute movements to improve health. Well, what if medicine could be substituted for exercise? We could turn that popular saying from *exercise is medicine* to *medicine is exercise*. Researchers are working on developing chemical interventions that can mimic exercise without actual muscle movement. In a recent review, Li and Laher (2015) suggest that there are some "pills" that can begin to mimic the physiological benefits of exercise.

Li, S., & Laher, I. (2015). Exercise pills: At the starting line. *Journal of Pharmacology Sciences*, 36, 906-917.



### Take a Drink!

Is eight glasses a day still the rule? A recent article in *Harvard Health Newsletter* suggests 30 to 50 ounces which is about 4 to 6 glasses is just fine. If you are exercising, pregnant, or breastfeeding, you may need more. *CBS News* also interviewed medical personnel who suggested that you can substitute water with food high in liquid such as watermelon, spinach, or soups. The bottom line is not to get dehydrated. If you are thirsty, imbibe; if you are showing other signs of dehydration (dizziness, faintness, dark urine), take a drink!

CSB News. (July 20, 2015). How much water should you drink every day to stay healthy and hydrated?



## Some Schools Are Getting Kids Moving!

David Quick wrote a newspaper piece on Dave Spurlock in 2012. Spurlock was a high school athlete and hoped to make a college football team. When that did not materialize, he turned his attention to coaching football and baseball, which he did for more than 20 years. In 2007 he was recruited to serve in a leadership position with the Charleston County School District in South Carolina and became coordinator of health, physical education, athletics, ROTC, and wellness. Dave took over his position on the heels of No Child Left Behind that had teachers focusing on increasing academic test scores and certainly not focusing on physical activity and physical education in the schools, despite the rising research evidence that activity can help increase cognitive functioning at several levels. John Ratey, MD, a clinical professor of psychiatry at Harvard Medical School and author of *SPARK: The Revolutionary New Science of Exercise and the*

*Brain*, became allies with Spurlock and together they advocate for the importance of physical activity in the schools.

Spurlock was again recently featured in the *Washington Post* (Mease, 2015) as well as many other publications for his work. In Spurlock's "brain rooms" in the schools, you can find exercise bikes, stair climbers, mini-basketball hoops, and a variety of other equipment that students move on while performing classroom activities. The students do not call it exercise—they call it fun.

Share the video with all who are involved with physical education and physical activity in the schools. Perhaps other districts can or already have adopted similar programs. Readers are directed to an upcoming AKA webinar that may also pose some interesting ideas. Let's keep those kids moving!

-PMc

[www.washingtonpost.com/video/sports/in-this-classroom-the-kids-can't-sit-still/2015/10/20/035d7e58-5d66-11e5-8475-781cc9851652\\_video.html](http://www.washingtonpost.com/video/sports/in-this-classroom-the-kids-can't-sit-still/2015/10/20/035d7e58-5d66-11e5-8475-781cc9851652_video.html)

Mease, Rick. (October 20, 2015). In these Charleston, S.C., schools, children are seen, and heard, and always active. *Washington Post*.

Quick, David. (April 4, 2012). Former football coach talks neuroscience in connecting physical activity with better learning and behavior. *Post and Courier*.

Webinar on Comprehensive Physical Activity offered by AKA.

The American Kinesiology Association is pleased to offer this free webinar presented by Russell L. Carson, PhD, from the University of Northern Colorado. The webinar will be recorded and available for viewing 24 hours after the live webinar.

## EDITOR'S ONE CENT'S WORTH

## Ring in the New Year and Share Your Ideas

by Penny McCullagh, PhD, KT Editor



Penny McCullagh

I have just sent in all the articles for the first 2016 issue of *KT*. I want to thank all those who have helped retrieve materials, including Makaila Wallace and Shirl Hoffman, who continues to feed me information. I also worked with the Publications Committee on the idea of featuring faculty in departments who are attempting to do research and teaching across the subdisciplines in kinesiology. Please take a look at the inter- and intradisciplinary article in this issue and let me know if you would like to share some ideas from your own department.

I also put out a call to ask folks to share how they use *KT*. I must say I was not over-

whelmed with responses, so that call still stands. A major goal I have is to expand the readership so more people know about our field. *KT* is intended as a magazine with popular pieces, not a newsletter, so it should have wide appeal. Please send in your ideas. For example, I will attempt to put together a list of all universities that offer an introduction to kinesiology class and invite them to use *KT* as part of their courses. I believe it covers a spectrum of topics that could help beginning students understand a little about the breadth of our field. I will also be working to increase the readership outside of mainstream Kinesiology by increasing the presence of *KT* on social media.

Just before the last issue I received news that one of the leaders in our field had passed. We shared a self-written summary of Dick Schmidt's life, but I want to further

highlight his accomplishments. In kinesiology we had a huge growth in the academic nature of our field in the late 1960s and early '70s. That is when I entered the field as an undergraduate. The field was small and I was working on research with some of the early leaders so I had the opportunity to meet many of the new PhDs who were lighting fires in our subdisciplines. Now over 40 years later we are starting to lose many of those early leaders. For those new to the field, I urge you to go back and read some of their work. You will find fascinating ideas, and sometimes what you thought was new is not so new after all.

I'm looking forward to hearing from some of you about how *KT* can move kinesiology forward. Contact me at [kintodayaka@gmail.com](mailto:kintodayaka@gmail.com).

# AKA News and Updates

By Amelia Lee, Executive Director



Amelia Lee

## Survey Results Coming Soon

The American Kinesiology Association collaborated with the National Academy of Kinesiology and the American College of Sports Medicine to rank U.S. college and university campuses on their physical and programmatic resources that promote active living and healthy lifestyles. The National Collegiate Fitness Index survey was sent to more than 800 institutions of higher learning that had kinesiology-related programs in 2014, and 30 questions were asked about the campus physical environment, recreational facilities, physical education and health and wellness classes, intramural and club sports, fitness classes, and campus wellness.

After the surveys were returned, data were scored by an expert panel, which rated each school's campus environment on its conduciveness to physical activity. The report is now available and will be posted on the AKA website soon at [www.americankinesiology.org](http://www.americankinesiology.org).

## Sample Survey Questions

1. Do you have a campus master plan to promote walking and bicycling for transportation?
2. What is the number of rooms on campus with cardio equipment and weight training machines?
3. Do you require all undergraduate students to take at least one class that involves exercise or sport?
4. How many intramural sports are offered each year?
5. Do you offer fitness testing on campus?
6. Do you offer physical activity or wellness counseling on campus?

## AKA Content on MERLOT

Using the MERLOT platform for cataloging material, the AKA continues to make significant progress in offering multimedia educational resources for learning and online teaching about the field of kinesiology. At this time there are 100 pieces of content under the kinesiology folder, which is housed under science and technology. We are still in the early stages, but as time goes on an editorial board will work on cross-listing and adding more content.



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## **Adding Up: Exercise May Promote Healthy Brain Development in Children**

### **AKA Involved in NPAP**

The American Kinesiology Association, with Wojtek Chodzko-Zajko as our Board of Directors member, continues to participate as a member of the National Physical Activity Plan Alliance (NPAPA). During this past year the plan has been reviewed, refined, and revised. The Revision Executive Committee has developed a draft of a revised plan that will be released in mid-April 2016. Preparations for the release are taking shape at the present time and are expected to include an event in Washington, DC.



The AKA continues to offer professional development opportunities with free webinars that feature top scholars in kinesiology sharing their expertise on a host of topics in the field. Take advantage of these e-learning opportunities that assist our membership in the advancement of their departments, thereby advancing the field of kinesiology.

### **Upcoming AKA-Sponsored Webinar May, 2016**

Please join Dr. Walter Gmelch as he explains the fundamentals of effective academic leadership.

**The Call for Leadership: Why Chairs Serve, What They Do, and How Long Should They Serve**

Dr. Gmelch is a faculty member in the department of leadership studies at the University of San Francisco and one of the leading researchers in the study of academic leaders.

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### **Kinesiology Today**

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