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An Examination Of The Role Of Exercise In K-12 Principals' Professional Performance

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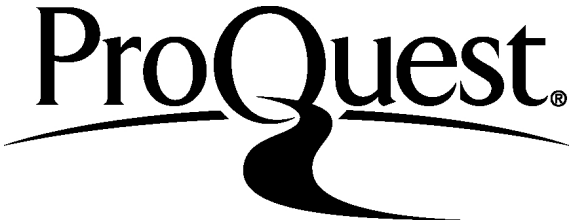

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ABSTRACT

The demands of the school principal can be quite strenuous. Change is occurring at a rapid pace, and the challenging times require higher, sustained energy levels. Today's principals must possess a high degree of physical stamina within their schools to maintain productive workforces (Gupton, 2003). This quantitative study explored whether regular physical fitness exercise had a relationship with successful school leadership. Data analysis involved correlation and multiple regression. As a result of the inferential analysis, no statistical significance was found in any of the variables or combination of variables in relation to professional performance. Although it may appear that no differences exist in principals' effectiveness whether they engage in exercise or not, this study will benefit principals, their supervisors, and leadership development programs in encouraging, motivating, directing, and teaching principals the importance of physical-fitness habits in their daily lives.

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INTRODUCTION

Study Rationale and Foundation

Effective school principals are crucial to positive and practical education reform (Fullan, 2002). Schools that have experienced success have depended on a strong and committed principal (Robinson, 2010). When people talk about what successful and effective principals do, the conversations often revolve around technical, human, educational/intellectual, and cultural skills (Sergiovanni, 2007). These traits and skills have dominated the leadership literature in recent years and appear repeatedly in training programs for school leaders (Sergiovanni, 2007). Given this preponderance of content, a question could be asked: Should training programs and literature include more about personal habits and investments? What about the exercise habits and traits of school leaders? Because the demands of the principalship can be quite strenuous, maintaining one's fitness while in this position might be just as important as anything else. What kind of understandings can be gleaned by researching whether the effectiveness of principals lies in their abilities and discipline to actively engage in physical exercise regularly?

When researching a possible relationship between fitness and leadership among top officials in the business world, McDowell-Larsen, Kearney, and Campbell (2002) found that leaders better manage the stress and challenges of their jobs by engaging in regular, consistent exercise routines. Could the same hold true in K-12 education? Can physical fitness impact job

performance? Neck and Cooper (2000) stated that all members of the organization benefit from leadership fitness, not just the leaders themselves. They stress the importance and benefits of fitness for leaders and believe that leaders who place a priority on fitness will gain maximum effectiveness and efficiency.

Principals in K-12 school buildings wear so many hats and play so many roles. Principals are expected to ensure that good instruction and learning are taking place while handling the complex nature of fast-paced change on many fronts (Gupton, 2003). Nobody describes the principal's position as easy; indeed, leading a school is intense work (Leithwood & Riehl, 2003). Principals perform their duties each day with a passion for students and learning while high-stakes testing and budget cuts are imminent (Portin, 2004). School days can be filled with a variety of disciplinary issues, angry parents, or demands from the central office. In order for leaders in any position or organization to operate successfully, they must be able to handle both the physical and mental stress of the work, but also demonstrate fitness in action and appearance (McGowen, 2003).

Statement of Problem

Serving as role models and setting a positive example are traditional principal responsibilities. When one sees a principal, he or she expects that this building leader maintains all the important standards education embraces, has worked hard, and has been highly successful in his or her undertakings. One further expects leaders to portray the image of an experienced principal. Work demands are up, and resources are dwindling. Change is occurring at a rapid pace, and the challenging times require higher, sustained energy levels. Gupton (2003) encouraged principals not to be discouraged or misled. Although the pressures to succeed, the fear of failing, the late nights, the volume of classroom observations, the paperwork and reports,

and much more can wreak havoc on their personal lives, principals often consider their positions some of the most rewarding professions on earth. The enormity of the principals' workload and the work are too great to expect less-than-healthy people in those positions. Today's principals must possess a high degree of physical stamina within their schools to maintain productive workforces (Gupton, 2003). Yet too often educational leaders neglect themselves trying to fulfill their professional responsibilities.

A study of presidential candidates showed that successful leaders make physical fitness a priority in their daily lives (Neck & Cooper, 2000). Educational leadership development courses, workshops, and literature provide little credence to physical fitness as a key component or characteristic in effective school leadership. Since professional development does not address physical fitness, school leaders must consciously engage in regular physical activity, if they wish to get it. School principals are usually the first in the office and the last to leave. Before they get to the office and after they leave, principals participate in other activities. During the day they continue to be active. Because of the need to prioritize fitness and the daily stress of this position, it seems imperative that school principals make time for fitness.

With all of the demands of educational leadership, can principals be successful without physical fitness? Holding a healthy level of physical fitness can serve as the foundation for discipline of mind and body. Leadership development programs may very well miss this important first step in effective leadership.

Purpose of the Study

The purpose of this study was to explore whether regular physical exercise has a relationship with successful school leadership. This research also serves to articulate for leadership development programs and models the necessary components of fitness reported by

school leaders that cultivate instructional leadership, building management, interpersonal relationships and self-efficacy in their daily professional responsibilities. Perhaps engaging in physical fitness on a regular basis should be considered in tandem with the traditional traits and skills focused on in most leadership development programs, and this was explored in this study.

Research Questions

This study sought to answer one main research question: Is there a relationship between principals' exercise habits and elements of best practices in professional performance?

Descriptive Subquestions

1. What are the levels of exercise displayed by principals in terms of aerobics and strength training?
2. What are the levels of self-efficacy reported by practicing principals in targeted areas of job performance (instructional leadership, building management, and development of social capital) at varying exercise levels and regimens?
3. What are the levels of best practices displayed by principals in targeted areas of job performance (instructional leadership, building management, and development of social capital) at varying exercise levels and regimens?

Inferential Subquestions

1. Do minutes per week and/or intensity of aerobic exercise and/or strength training predict a significant proportion of the variance in principals' self-efficacy in targeted domains of job performance (instructional leadership, building management, and development of social capital)?
2. Do minutes per week and/or intensity of aerobic exercise and/or strength training predict a significant proportion of the variance in principals' use of best practices in

targeted domains of job performance (instructional leadership, building management, and development of social capital)?

Given an analysis of the questions above, this study was able to explore the varying degrees to which aerobic exercise and strength training bear relationship with leadership self-efficacy and frequency of use of best practices.

Limitations of Study

The limitations of a study are those matters and incidences in a study that are out of the researchers' control and can impact or influence the application or interpretation of the results of the study (Leedy & Ormrod, 2005).

- One limitation of this study was the principals' abilities to self-report reliably and accurately. Respondents may not have felt comfortable providing answers that presented themselves as leaders or people in an unfavorable manner. Even if participants were trying to be honest, they may have lacked the introspective ability to provide accurate answers.
- Another limitation of this study was the public school principals' concept of exercise and fitness that might not have been universally understood. Respondents may not have been fully aware of the terminology or what was being asked. The potential existed for questions to be misunderstood.
- A further limitation of this study was that it would not provide a 360-degree perspective. It was only the viewpoint of the leader. Leaders' direct supervisors and colleagues were not considered for purposes of data collection in this study.
- One last limitation to look at was the fact that those who were less fit were potentially less likely to complete the survey.

Delimitations

Delimitations define the parameters of the research. The delimitations of a study are those characteristics and decisions that a researcher makes that limits the scope and defines the boundaries set in the study (Leedy & Ormrod, 2005).

This study was delimited to 1,923 principals known by the Indiana Department of Education (IDOE) as principals of non-charter, non-virtual public school corporations in Indiana. Charter and virtual schools may not always follow similar configuration and routine as public schools. The intent was to capture the perspective of principals who had similar structures in their job duties and responsibilities. By not including charter, virtual, or non-public school principals in the study, the information gathered may have lacked the greater volume of perspective from all of Indiana's principals. Thus, the findings weare not necessarily generalizable to the principals of charter, private, or virtual schools. However, delimiting it to public school principals allowed for a consistent perspective regarding duties and responsibilities.

Another delimitation was that the research did not include other components of wellness (sleep, nutrition, etc.). By not including other facets of wellness, the findings and conclusions were limited to physical activity and did not include other important components of wellness that may affect a principal's effectiveness. Although these other components of wellness could be relevant to a principal's effectiveness, they were not directly relevant to this particular study, which focused on physical fitness. The purpose of the research was to focus solely on the relationship of physical exercise and leadership effectiveness.

Definitions

With an interest of maintaining a consistency of understanding, a number of terms in this study are now defined.

Aerobic exercise or "cardio" is defined as the physical activities that push the heart to beat faster and makes breathing harder (Centers for Disease Control and Prevention [CDC], 2014).

Building management is defined as organizing tasks and personnel, developing rules and procedures, evaluating employees, and providing appropriate information to staff and students (Council of Chief State School Officers [CCSSO], 2008).

Instructional leadership is defined as creating learning opportunities for both students and teachers. This includes defining values and purposes of the school, implementing the programs of teaching and curriculum, and establishing the school as a professional learning community (CCSSO, 2008).

Strength training is defined as activities that exert all major muscle groups of the body, such as the legs, hips, back, chest, abdomen, shoulders, and arms (CDC, 2014).

Self-efficacy is defined as one's belief in one's ability to succeed in specific situations through effort expended (Bandura, 1977).

Social capital is defined as the networks of relationships among people who work in a particular organization, enabling them to function effectively (Mbigi, 2000).

Summary

This investigation is shared in five chapters. This first chapter has delivered the introduction, the statement of the problem, the purpose of the study, research questions, definitions for terms used within the study, limitations, delimitations, and a summary. In

Chapter 2, a review of concerned literature regarding challenges in K-12 education, effective leadership, educational leadership, leadership and development programs, fitness in leadership, exercise benefits, and self-efficacy is presented. Chapter 3 offers the methodology and procedures planned and for this study. In Chapter 4, the summary and analysis of data are proposed. Chapter 5 provides a generalization of the results, conclusions, and recommendations for future studies and applications of findings.

CHAPTER 2

LITERATURE REVIEW

The purpose of this study was to demonstrate that regular physical fitness exercise has a relationship with successful school leadership. Although most literature regarding fitness and leadership is not from an educational perspective, much can be gleaned from the existing text. The literature review is divided into seven sections to provide proper context to foster a frame of reference for the current circumstances of the educational leader. The areas of review are challenges in K-12 education, effective leadership, educational leadership, leadership and development programs, fitness in leadership, exercise benefits, and self-efficacy.

Challenges in K-12 Education

These are difficult times for schools. Criticism has been commonplace for the past few decades. The need for qualified principals has never been as vital as today given the current emphasis on accountability for school improvement (DuFour & Mattos, 2013; King, 2002; Levine, 2005). The role is weighed down by the excess baggage and distractions from the main teaching and learning mission of the school. Policymakers have lengthened the opportunity and extent of government regulation and accountability. Because of the competitive nature of our global marketplace, the United States now requires a more educated population (Levine, 2005). States have responded by raising standards, testing students, and demanding accountability. Barth's (1980, 1986) analysis of the daily operations of a school and the roles school leaders play

each day, led him to ask why a single person would take on that burden. He believed it is a major weakness in school leadership to attempt to perform the duties and responsibilities alone. This burden becomes heavier when more challenges present themselves to the principal (Barth, 1990). School leaders view themselves as responsible for instructional leadership, regardless of whether or not they feel able to perform it (Hallinger, 2005).

No longer do school principals serve chiefly as supervisors. They are expected to lead the change of their schools and school systems (Levine, 2005). *A Nation at Risk* (National Commission on Excellence in Education, 1983) put attention on school leadership, placed student performance as the measure of school achievement, and demanded accountability for school leaders. Americans began questioning its schools—specifically targeting the leadership. Following this report, the significant and prevalent problems of America's public education system came to the forefront. In 1990, a report the Commission on the Skills of the American Workforce released a report indicating that a few Americans had become richer, but a far larger number had lost ground (National Center on Education and the Economy, 2007). These findings began the urgency for college and career readiness as well as student test scores compared with other nations.

The challenges noted above have created a perplexing environment for public schools. While navigating this terrain, school principals are trying to provide adequate means to promote excellence while budgets have been cut.

Budget Reductions

The state of the United States' national economic position has permitted a reduction in tax revenues along with increases in the demand for publicly funded services and given rise to disparities in state budgets (T. V. Young & Fusarelli, 2011). Because education makes up the

majority of state and local budgets, it is no surprise that public education is shouldering the impact of cutbacks. In the midst ofe budget woes that schools are experiencing, educators still must face the accountability requirements set by their respective states and the No Child Left Behind (NCLB) act (T. V. Young & Fusarelli, 2011). NCLB legislation stresses the increasing visibility and importance of school administration in the larger education reform efforts (Gates, Ringel, Sanntibanez, Ross, & Chung, 2003). The increased numbers of disadvantaged children in the United States, and the conditions in which they live, have made matters even more challenging for public schools (Foundation for Child Development, 2010).

Ginsberg and Multon (2011) looked at how school leaders handle and are affected by tough economic times. Their series of survey questions focused on budget cuts and the effect on workplace issues. Included in the issues that experience the greatest impact because of budget reductions are challenges faced as leaders, efforts to implement innovation, services offered, and the morale of faculty and staff. Ginsberg and Multon (2011) also found some troubling discoveries emerging in response to the budget cuts, including the fact that principals worry about their personal leisure time and their personal lives. Their physical well-being has been negatively affected. For principals, this occupation-wide financial position affects their jobs in ways that are very stressful. Principals are dealing with difficult budget-related issues. The economic outlook is bleak in most states. Tending to the health-related and emotional needs of educational leaders makes sense (Gupton, 2003).

Principal Stress

In response to the political, economic, and technological changes due to social initiatives and global competition, national reforms in education have been enacted (Bredeson, 1993; Hertert, 1996). With each reform, new initiatives brought new role responsibilities layered on

top of the existing ones (DiPaola & Tschannen-Moran, 2003; Olsen & Sexton, 2009; Portin & Williams, 1996). National reports and legislation including *A Nation at Risk* (National Commission on Excellence in Education, 1983), *Goals 2000* (U.S. Department of Education, 1998), and the Elementary and Secondary Education Act of 2001 (U.S. Department of Education, 2002)—better known as *No Child Left Behind* (NCLB) —created additional stress for school principals leading to failure, frustration, work overload, and doubt about their personal competence and abilities to effectively fulfill the roles of educational leaders (Bredeson, 1993; Fullan, 2000).

The most recent educational reforms have taken place in response to NCLB (U.S. Department of Education, 2002). NCLB was based on measuring and increasing student achievement through high-stakes testing and has increased the pressure on school administrators through a progressive, sanctions-based accountability system that penalized schools that did not make adequate yearly progress (Mintrop & Sunderman, 2009). Accountability based on sanctions has been shown to incrementally increase stress, negativity, and demoralization of teachers and administrators at the building level (Lambert & McCarthy, 2006; Tucker & Codding, 2002).

Building principals in the 21st century are experiencing stress at high levels (Daly, 2009; DiPaola & Tschannen-Moran, 2003). Overwhelming responsibilities and expectations from layers of roles created with each new school reform have become frustrating and extremely stressful for school principals (DiPaola & Tschannen-Moran, 2003; National Association of Elementary School Principals [NAESP], 2007). Still in place are structures from the industrial age, yet students are expected to function in the information age (Morrison, 2002; Snyder, Acker-Hocevar, & Snyder, 2008). Rigid educational policy has raised the expectations for all

students to achieve at extremely high levels, but centralized control is limiting the creative and innovative paths of teaching and learning (Daly, 2009; Mintrop & Sunderman, 2009; Olsen & Sexton, 2008). These ambiguities in principals' roles can create high levels of stress and low work satisfaction (Owens & Valesky, 2007). A growing reduction in the retention and recruitment of qualified principals may be the result of policymakers, districts, and principal development programs not addressing principal stress from excessive role responsibilities, job expectations, and contradictions from the age of accountability (Daly, 2009; DiPaola & Tschannen-Moran, 2003; Olsen & Sexton, 2008).

Leadership Longevity

If the future bears a resemblance of the past two decades, more than 40% of current principals and superintendents can be expected to leave their jobs (Levine, 2005). Data from recent studies suggested, "Only about half of the beginning principals remain in the same job five years later, and that many leave the principalship altogether when they go" (Viadero, 2009, p. 1). The turnover rate of school principals is receiving much attention in the research literature (Fink & Brayman, 2006). "Turnover rates for principals range from 15 percent to 30 percent each year, with especially high rates of turnover in schools serving more low-income, minority, and low-achieving students" (Beteille, Kalogrides, & Loeb, 2012, p. 906). M. D. Young and Fuller (2009) studied the retention rates of newly hired principals in Texas from 1996 through 2008. They reported seven major findings from this study:

- Principal tenure and retention rates vary dramatically across school levels, with elementary schools having the longest tenure and greatest retention rates and high schools having the shortest tenure and lowest retention rates.

- High school retention rates are strikingly low for all schools—just over 50% of newly hired principals stay for three years and less than 30% stay for five years.
- The level of student achievement in the principal's first year of employment heavily influences principal retention rates, with principals in the lowest-achieving schools having the shortest tenure and lowest retention rates and the high-achieving schools having the longest tenure and highest retention rates.
- The percentage of economically disadvantaged students in a school also has a strong influence on principal tenure and retention rates, with principals in high-poverty schools having shorter tenure and lower retention rates than principals in low-poverty schools.
- Principal retention is somewhat lower in schools in rural and small-town districts and somewhat higher in suburban districts whose students tend to be White and not economically disadvantaged.
- The personal characteristics of principals such as age, race, and gender appear to have only a small impact on principal retention rates.
- Certification test results appear to have little impact on principal retention rates. (M. D. Young & Fuller, 2009, p. 17)

The authors also identified four primary factors that they believed were associated with the overall issues of principal turnover, including (a) accountability pressure, (b) difficulty and intensity of the job, (c) absence of guidance and support from the corporation office, and (d) compensation.

The knowledge of the significance in having quality principals in our schools unfortunately comes at a time when developing and maintaining excellence in this position is

difficult. A 2001 survey showed that 50% of district leaders have difficulties in employing qualified principals (Peterson, 2002). Lack of support and insufficient preparation and support for the principal are often cited as primary reasons for this challenge (Darling-Hammond, LaPointe, Meyerson, Orr, & Cohen, 2007; Peterson, 2002).

Research that directly assesses how workplace conditions impact principal departure and mobility intentions is scarce. Evidence from some studies (Eckman, 2004; Johnson & Holdaway, 1994), however, indicated many challenges in modern school principalship exist that negatively influence profession transitional decisions among school principals. Excessive work overload creates a mounting challenge and role ambiguity among many principals, affecting their abilities to lead their schools with sustained effort and vision (Howley, Andrianaivo, & Perry, 2005). Howley et al. (2005) indicated that principals are expected to carry out numerous roles on a daily basis such as handling paperwork and phone calls, supervising and evaluating faculty, attending meetings, participating in evening activities, handling discipline issues, and participating in curriculum and instructional development. On top of these activities, principals are also expected to provide sound leadership that includes setting school-wide vision, leading the curriculum and instructional programs, and providing professional development for teachers. As a result, in a typical week, principals devote 60 to 80 hours to their jobs (Hertling, 2001). These hours take considerable time away from family and other social obligations. Such work overload is among the major reasons for job dissatisfaction and job burnout among school principals (Friedman, 2002).

Kafka (2009) reported that the principalship is complex and that educational reforms have only added to this complexity. New accountability requirements place expectations for principals to be results-oriented administrators who document and provide evidence verifying

that they are effective (Winter & Morgenthal, 2002). In many cases, principals resent the high expectations combined with inadequate training and support, which undermines principals' morale and enthusiasm (Kafka, 2009). In light of the amount of time and the demand of the work, researchers have found that salary of school principals is not competitive enough (Papa, Lankford, & Wyckoff, 2002). Jacobson (2005) discussed the differentiation between principal and experienced teacher salaries. He reported that this differentiation is often insignificant, given that teachers are eligible for additional compensation from special duties and given the long hours and extended contracts under which principals work.

The importance of job satisfaction for principal career longevity is predicted on research that suggests that satisfied individuals generally perform better than dissatisfied counterparts. Satisfied individuals generate a sense of school ownership and commitment (Van Dyne & Pierce, 2004).

Effective Leadership

Bass (1981) described leadership as an ancient art. He said leadership "occurs universally among all people regardless of culture, whether they are isolated Indian villagers, Eurasian steppe nomads, or Polynesia fisher folk" (p. 5). Leadership theories have been plentiful. Trait theories uphold that leaders are granted greater qualities that separate them from followers. Environmental notions proclaim that leaders arise as a result of time, place, and circumstance (Marzano, Waters, & McNulty, 2005).

Paglis and Green (2002) explained that leadership is a progression of identifying where the organization is and where it is going. They elaborated further by stating that it also involves implementing change by influencing followers and encouraging them to make a commitment to hard work in pursuit of goals and vision. DuFour and Marzano (2011) described the best leaders

as those who "are in love—in love with the work they do, with the purpose their work serves, and with the people they lead and serve" (p. 194). Leaders do not consider their professions as jobs; instead, they think of them as callings (DuFour & Marzano, 2011). Work is a process, not merely productivity or results (Russell, 2008). If leadership is indeed a process and involves finding the right strategies and methods to motivate followers, then there is no one-way to lead.

Zacarro (2007), a trait theorist of leadership, developed a theory that focused on a defined set of abilities for leadership. Zacarro argued that these traits could be learned. Zacarro's model maintained that effective leadership results from a combined set of intellectual and social capabilities, as well as dispositional tendencies, with each set of traits adding to the influence of the other.

Neider and Schrieshmein (1988) created a three-stage model on effective transformational leaders. The stages must occur in order. The first stage included conditions of job analysis, strategies of making good decisions, and training of employees or subordinates. The second stage for effective leadership included goal setting, individual attention or consideration given to stakeholders, and rewards or punishment contingent on stakeholder's efforts. The third stage consisted of monitoring and assessment of problem solving, meeting the needs of employees or subordinates, and providing feedback.

Collins (2001) established that outcomes of productive leadership come from carrying out good decisions, meticulously over and over again. He described the best leaders as those who "[blend] extreme personal humility with intense professional will" (p. 21). Collins also believed leaders who were successful, continually assessed their own performance. Covey's writings and theories have also crossed over into education from the business world. Covey (1989) provided seven behaviors that promote positive results in a variety of situations. He

structured these as directives. *Being proactive* refers to making choices and decisions to form our own path as opposed to being reactive. *Beginning with the end in mind* means understanding the purpose and end result. *Putting the first things first* refers to prioritizing matters and time based on urgency. *Thinking win/win* contains that goals and decisions should be made in a way where all parties of the group feel good about the decision and will commit to the goals and organization. *Seeking first to understand, then being understood* emphasizes the importance of listening. *Synergizing* is all about building cooperation and trust by opening the mind to new possibilities. *Sharpening the saw* reminds of the importance of re-energizing mind and body.

Many books, articles, seminars, and theories are available regarding best practices in leadership. The matter of how much or little to stipulate leadership skills and proficiencies is a difficult one. If the proficiencies are to be advantageous, they must be described and taught in order to be learned, observed, and measured (Robinson, 2010). Measuring the effectiveness or proficiency of a leader is a significant problem. Is there a way to create evaluation measures of leadership that are well-quantified to guarantee reliable appraisal, yet takes into account that being highly effective in any particular context involves the infusion of different types of knowledge and skills? (Louden & Wildy, 1999).

Drucker (2002) stated that effectiveness can be taught and learned. He contended that most executives have a high intelligence but lack an imagination. In current society, the large organization is prevalent. The need for an effective leader to manage is essential in the organization's success. In Drucker's (2002) words, "Effectiveness can no longer be taken for granted" (p. 3). Drucker discussed that one of America's greatest resources is its education system. Our educational system, along with the higher education system, represents one of the most expensive investments Americans make. He contended that education then becomes a

central advantage to productivity in our global economy. The connection is that we must have effective leaders to produce an educated workforce. In return, this educated workforce develops effective leaders. Who can become that effective leader? According to Drucker (2002), it can be anyone as long as he or she is taught the right skills; "Effectiveness is not a subject, but self-discipline" (p. 166).

Educational Leadership

"Leadership is considered to be vital to the successful functioning of many aspects of a school" (Marzano et al., 2005, p. 5). The important role the principal plays in schools has been the topic of research over the years. Because schools are accountable for student achievement, the position of the principal has received much attention (Leithwood, Lewis, Anderson, & Wahlstrom, 2004). Principals and staff must collaborate to bring about change (Crum & Sherman, 2008). As building leaders, this responsibility rests on the shoulders of school principals. Initiating change can be difficult, as leaders are usually toying with habits and behaviors that are engrained (Heath & Heath, 2010). "Successful principals and their staff respond to the challenges of continuing to focus upon engaging students in learning while planning for implementing an increasing number of changes" (Day, 2007, p. 14). Research has suggested that an effective school principal boosts higher student achievement among students (DuFour & Marzano, 2011).

Sergiovanni (2007), a contemporary educational leadership theorist, noted how flawed it is to continue to think about leadership as something forceful and direct. He said, "Since the leadership functions needed vary with the situation, the abilities needed also vary" (p. 116). However, some common theories and themes among theorists and researchers exist that can be used in the pursuit of effective leadership.

Elements of Best Practice

Marzano et al. (2005) identified 21 responsibilities necessary for quality educational leadership. The authors noted that for decades each has been addressed in theoretical literature, but because the analysis showed the statistical significant relationship with student achievement, it is an important new supplement to research. Marzano's list included "affirmation; change agent; contingent rewards; communication; culture; discipline; flexibility; focus; ideals/beliefs; input; intellectual stimulation; involvement in curriculum, instruction, and assessment; knowledge of curriculum, instruction, and assessment; monitor/evaluation; optimization; order; outreach; relationships; resources; situational awareness, and visibility" (Marzano et al., 2005, pp. 42-43).

Marzano et al.'s (2005) research suggested that because such an emphasis is placed on leadership in education, a scholar would assume that the road to effective leadership is clearly mapped out. This is not the case. The body of educational leadership research is not as established as research in general leadership. In Marzano et al.'s exploration of research from the last 35 years, 5,000 articles and studies addressed school leadership. Of this body of work, only 69 actually "examined the quantitative relationship between building leadership and effective leadership" (Marzano et al., 2005, p. 6).

Sergiovanni (2007) believed leadership style and personality are not as important as substance. He noted that school leadership is about morally linking people to each other and their work. Change is a vital part of building leadership and includes people. Portin (2004) described seven functions of leadership found in all schools which also incorporates human elements and personalities of leadership:

- Instructional leadership. Ensuring quality of instruction, modeling teaching practices, supervising curriculum, and ensuring quality of teaching resources.
- Cultural leadership. Tending to the symbolic resources of the school, such as traditions, climate, and history.
- Managerial leadership. Overseeing the operations of the school, including the budget, schedule, facilities, safety, and transportation.
- Human resources leadership. Recruiting, hiring, firing, inducting, and mentoring teachers and administrators; developing leadership capacity and professional development opportunities.
- Strategic leadership. Promoting vision, mission, and goals—and developing a means to reach them.
- External development leadership. Representing the school community, developing capital, tending to public relations, recruiting students, buffering and mediating external interests, and advocating for the school's interests.
- Micro political leadership. Buffering and mediating internal interests while maximizing resources, financial and human. (p. 17)

The National Policy Board for Educational Administration in conjunction with the Interstate School Leaders Licensure Consortium (ISLLC) reviewed and updated the ISLLC Standards for educational administration (CCSSO, 2008). The six standards identified for administrative success are listed as follows:

1. Standard #1—An education leader promotes the success of every student by facilitating the development, articulation, implementation, and stewardship of a vision of learning that is shared and supported by all stakeholders.

2. Standard #2—An education leader promotes the success of every student by advocating, nurturing, and sustaining a school culture and instructional program conducive to student learning and staff professional growth.
3. Standard #3—An education leader promotes the success of every student by ensuring management of the organization, operation, and resources for a safe, efficient, and effective learning environment.
4. Standard #4—An education leader promotes the success of every student by collaborating with faculty and community members, responding to diverse community interests and needs, and mobilizing community resources.
5. Standard #5—An education leader promotes the success of every student by acting with integrity, fairness, and in an ethical manner.
6. Standard #6—An education leader promotes the success of every student by understanding, responding to, and influencing the political, social, economic, legal, and cultural context. (CCSSO, 2008, pp. 20-21)

Instructional Leadership

Over the years, the roles of school leaders have expanded to an emphasis on teaching and learning, professional development, data-driven decision making, and accountability (Institute for Educational Leadership, 2000). With leadership for student learning as the priority, "Instructional leadership might simply be described as anything that leaders do to improve teaching and learning in their schools and district" (King, 2002, p. 62). King's observations have led to describing essential tasks in Instructional Leadership. Under this description, school leaders:

- Lead learning. Instructional leaders participate in regular, collaborative, professional learning experiences to improve teaching and learning.
- Focus on teaching and learning. Instructional leaders maintain and model a focus on improving teaching and learning by helping teachers improve their instructional practice.
- Develop leadership capacity. Instructional leaders devote a significant amount of time to developing instructional leadership capacity in others in their schools.
- Use data to inform decisions. Instructional leaders know they must develop the skills to collect and use data from a variety of sources to inform school improvement decisions.
- Use resources creatively. Instructional leaders make creative use of all resources—people, time, and money—to support school improvement. (King, 2002, p. 62)

An absolute assessment does not exist to test for evidence of instructional leadership, nor does a complete list of traits and behaviors. However, these tasks are similar to ones discussed earlier (e.g., CCSSO, 2008; Marzano et al., 2005; Portin, 2004).

Building Management

The principal must be a skilled observer, communicator, and information seeker to operate most effectively (Gupton, 2003). Assessing, creating, and implementing school policies and procedures involve having hands in all areas of the schools operations to learn how their stakeholders feel about the school, students, colleagues, and their leaders. The more information principals can acquire about why and how schools operate, the more they are able to make good decisions and guide the school in growth and improvement. Possessing the skills to measure and

maintain a positive school climate is crucial to good school management (Hoyle, English, & Steffy, 1994).

With regard to building management and climate, the following principal activities were most often recognized by teachers from higher achieving schools in the Gupton's (2003) study, in which teachers noted that the principal

- communicates high expectations for student achievement,
- protects faculty from undue pressures,
- recognizes the professional accomplishments of staff members including basic goal achievement,
- assesses faculty morale, and
- establishes a safe and orderly environment with a clear discipline code.

Social Capital

A foundational component of the operational definition of social capital is that social networks have value. Social capital is not just about warm, fuzzy feelings. Social capital has a wide array of definite benefits that range from trust, reciprocity, information, and cooperation associated with social networks (Briggs, 1997). Social capital establishes importance among the people in the organization.

Social capital is an organization's emotional and spiritual resource (Mbigi, 2000). Social capital is a relatively new concept in education. However, some research is available that looks at its potential effects in our schools. The idea of social capital is multifaceted, as it involves both knowledge and experience of different individuals for the making of new knowledge (Ying, Daud, & Kiong, 2011). Nahapiet and Ghoshal (1998) supported this definition, as they explained that social capital contains present information in relation to what already exists in the

environment and the knowledge that was accumulated by the different individuals or groups during exchanges of information. This means the network of relationships among people in an organization can lead to greater effectiveness. The effectiveness of the knowledge creation is based on the communication between people in an organization.

Much of the information regarding social capital within an organization has focused on internal or external social capital. Internal social capital concerns the relationships between leaders and those whom they lead. Internal social capital also centers on the relationships across all of an organization (Hitt & Ireland, 2002). Relationships with outside sources who provide resources, is a focus of social capital. These external providers of resources can include funding and personnel. External ties can help to safeguard the organization from detrimental or troublesome external influences (Useem, Christman, Gold, & Simon, 1997).

Social capital consists of three dimensions: structural—the associations among the people and frequency in which they share information and knowledge (Sparrowe, Liden, Wayne, & Kramer, 2001), relational—the personal relationships people have developed with each other through a history of interactions (Leana & Van Buren, 1999), and cognitive—that interaction among individuals allows for a better development of common goals and a shared vision for the organization (Ying et al., 2011).

Leana and Pil (2006) examined social capital in school performance. Their research found that schools with higher levels of school performance had internal social capital and external social capital present. The findings indicated that both internal and external social capital were significant correlated with students' achievement test scores. Principals play important roles in fostering the circumstances where effective teaching and learning occur.

Leithwood (2005) concurred, as he believed that both internal factors to leaders, as well as external environment foster successful school leadership.

It has become increasingly apparent during the past several years of the importance of clearly defining what successful learning or performance looks like. Studies regarding the effectiveness of leadership development indicate an association of the leaders' personality traits to their performance measures (Bass, 1990). A person's level of cognitive ability, self-confidence, energy level, and tolerance for stress were correlated with the ability to emerge as a leader in an organization (Bass, 1990). Can more effective leaders be expected to have higher self-efficacy and physical fitness scores? Rice, Yoder, Adams, Priest, and Prince (1984) provided additional support for an association between leadership effectiveness and high levels of physical fitness. This study reported a significant positive relationship between a cadet's physical capacity and being evaluated as an effective leader (Rice et al., 1984).

Leadership Development Programs

The emphasis on leadership development in schools has resulted from external policy reforms intended to drive improvement in schools by changing school leaders' practices (Barth, 1986; Hallinger & Wimpelberg, 1992). The key curricular emphasis was the effective school model, which comprised the major features in instructional leadership (Grier, 1987; Hallinger & Wimpelberg, 1992; Marsh, 1992). In the late 1980s, the National Policy Board on Educational Administration asked for comprehensive changes in the professional preparation of school administration (Kowalski, 2005).

The need for effective leadership development programs has never been greater than it is now (Dillbeck & Orme-Johnson, 1987). What is the best way to prepare principals for the leadership roles they will attain? What is the best way to support and encourage professional

growth once principals are established in their roles? A school district's primary goal is to investment in professional development for principals in order to enhance their effectiveness (Grissom & Harrington, 2010). Although principals are an important factor in developing successful schools, little research exists regarding the knowledge, skills, and abilities principals need to be successful (Darling-Hammond et al., 2007). The literature on professional development for principals is amazingly thin, leaving educators and policymakers with little direction on strategies for supporting current leaders (Brown, Anfara, Hartman, Mahar, & Mills, 2002). Barth (2001) spoke frankly regarding professional development for principals. He explained, "Principals take assorted courses at universities, attend episodic in-service activities within their school systems, and struggle to elevate professional literature to the top of the pile of papers on their desks" (p. 156). Barth concluded that if one can contrive methods to assist principals in carefully reflecting on the work they do, examine that work, process their thinking through oral and written expression, and engage in dialogue with colleagues and peers about that work, they will better understand the tasks facing them. Districts have shown greater willingness to support principals in continual growth. Since 2000, more than half of U.S. states have adopted mentoring requirements for newly hired principals (Spiro, Mattis, & Mitgang, 2007). Mendels and Mitgang (2013) indicated that the following areas are the focus of principal leadership development and growth: data training and use of data, instructional leadership, and planning for changes in leadership. Effective professional development for principals focuses on improved teaching and learning, includes standards and researched-based practices, mentoring, and coaching (Darling-Hammond et al., 2007).

Principal leadership development programs need to have the capacity to educate principals in the skills and knowledge necessary to lead today's schools and districts (Thomas &

Kearney, 2010). It is crucial that school leaders understand change and know how to initiate it, lead it, and sustain it (Waters & Grubb, 2004). An article established by the National Association of Secondary School Principals (NASSP; 1997) included 18 skills to be addressed in principal development programs. These skills included leadership, problem analysis, judgment, sensitivity, organizational ability, delegation, planning, implementing, evaluating, written communication, self-development, handling resistance to change, giving feedback, creating new ideas, team building, dyadic interaction key behaviors, small group communication key behaviors, and large group communication key behaviors. The closest skill or component associated with physical fitness included in this model is self-development. McCollum (1999) believed that larger gains could be made in leadership development by focusing more attention on developing the leader from within. "We may be able to do a more effective job at developing leadership if we put more attention on developing the leader at the deepest level of the individual" (McCollum, 1999, p. 153).

NASSP provides learning opportunities for principals. Its opportunities are in the areas of mentoring and coaching, school improvement, developing leadership skills for change, and leading and teaching for student learning (NASSP, 2014).

One leadership development program that did include fitness into the module is The Leadership at the Peak (LAP), a weeklong program designed for top executives.

> The program, conducted at the Center for Creative Leadership's (CCL) campus in Colorado Springs as well as in Europe, is delivered approximately 18 times a year and gives participants the rare opportunity to join a small, powerful group of their peers in evaluating their leadership skills and potential. The cornerstones of the program are psychological and physiological assessment, feedback on current leadership impact, and

> suggestions for future development. An important component of the course is The Fitness for Leadership module, which is interwoven throughout the week and includes feedback on physiological data as well as daily exercise sessions. The rationale for inclusion of fitness during a week of leadership training is the belief that health and fitness can positively impact leadership performance-specifically that regular exercise will help executives better cope with the stresses and demands of their position, improve their public image, prevent debilitating diseases and ultimately increase leadership effectiveness. (McDowell-Larsen et al., 2002, pp. 316-317)

Fitness in Leadership

A healthy workforce is a top-priority for many organizations, given the direct and indirect costs of unhealthy employees (Macik-Frey, Quick, & Nelson, 2007). The World Health Organization (WHO; 1946) defined health as a "state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity" (p. 1). This definition has remained prevalent as the base of most modern definitions of health. A leader who fulfills an executive role is an employee assigned with exercising influence over others. As such, a healthy leader makes for a healthier organization and, importantly, is also an individual in a position to induce change, promote a positive organizational culture and influence the everyday experience of other employees. The unique and intense demands, as well as the stressors and flexibility required of leaders in organizations, suggest that their health is particularly critical for effectively engaging and performing their job duties and roles (Quick, Gavin, Cooper, & Quick, 2000).

Mendez, author of the first book dedicated to exercise, *The Book of Bodily Exercise* published in 1953, concluded, "The easiest way to preserve health and with greater profit than all other measures is to exercise well" (as cited in McDowell-Larsen, 2003, p. 19). This concept

evolves from the ancient laws of Greek health. Those laws acknowledged that physical activity is a necessity for healthy living. Engaging in physical activity and exercise is important for leaders today. Neck and Cooper (2000) stated that executives today face many demands—including physical ones. The pressure to succeed and the stress of being responsible for many people, bring on the physical demands. Endless meetings and extremely long working hours are par-for-the-course for executives. Neck and Cooper's research provided evidence that those executives who engage in exercise and are in top shape can handle these demands more effectively and thus find success in their daily tasks. Anecdotal data gathered in personal discussions and related studies corroborate the relationship between fitness and performance (Neck & Cooper, 2000).

Various research studies reinforce the assertion that fitness supports performance. For instance, commercial realtors who participated in a 12-week aerobic-training program experienced larger sales commissions than the realtors who did not participate in the program (Gettman, 1980). Also, Frew and Bruning (1998) found that workers from a hospital equipment firm who participated in a similar aerobics-training program showed a higher level of job productivity and satisfaction than workers who did not participate in the fitness program.

The primary goal of exercise is to get fit. Engaging in physical exercise is the easiest and best way to maintain health. This notion is the message the CCL advocates upon the leaders who attend the center's LAP program. To learn about exercising and its association with leadership excellence, the CCL has collected data from LAP participants. Sharon McDowell-Larsen runs the CCL in Colorado Springs, Colorado, and conducted research regarding leadership and fitness. Her 2001 study showed that exercisers were rated higher by their peers on the 12 out of 22 scales (McDowell-Larsen et al., 2002). Furthermore, exercisers rated six out of the top 10

scales as being important for success. Visionary thinking, influencing and negotiating, cross-functional capability, business situation versatility, and high impact delivery were the scales that both self-reports and peers rated higher for exercisers. Based on independent observer ratings, McDowell-Larsen et al. (2002) summarized that regular exercise is positively correlated with leadership performance. They deduced that engaging in a regular fitness regimen could help the executive meet the demands of the job.

Exercise Benefits

Fit individuals possess higher levels of energy, are less likely to become obese, and enjoy heightened sensations of well-being (Cooper, 1995; Neck & Cooper, 2000). A great deal of attention has been given to the positive role that physical exercise plays in the prevention of medical conditions. Researchers are also focusing on physical exercise and psychological well-being. Physical activity is beneficial to the body, mind, and spirit. It aids the cardiovascular system, fostering a slower heart rate, lower blood pressure, and a less-intense response to stressful events (Bejes, 2005). Unfortunately, plenty of documentation exists to support the benefits associated with physical exercise; however, little evidence exists to support relations between exercise and psychological well-being. In a literature review, McAuley (1994) considered the relation between both positive and negative psychological health and exercise. The findings showed the positive correlation between exercise and self-esteem, self-efficacy, psychological well being, and cognitive functioning, and the negative correlation between exercise and anxiety, stress, and depression. Scully, Kremer, Meade, Graham, and Dudgeon (1998) conducted research concentrating on relationships between physical exercise and depression, anxiety, mood, self-esteem, premenstrual syndrome, and body image. Their research showed positive effects in all of the aforementioned areas.

Physical Benefits

Much literature exists on the physiological gains in people who engage in regular physical fitness. One study showed improvements in the cardiovascular function and strength, as well as reductions in body fat and weight, for 66 men engaged in a two-year exercise program (Neck & Cooper, 2000). Another study revealed that changing lifestyle habits to include diet and exercise could reverse the atherosclerotic changes of coronary heart disease (Healthy People 2000, 1990).

Exercise is deemed the customary method for improving and maintaining physical and emotional health. Regular physical exercise creates cardiovascular adjustments that increase skeletal muscle strength, endurance, and exercise capacity (Thompson et al., 2003). Thompson et al. also went on to state that regular exercise thwarts the development of coronary artery diseases and diminishes symptoms in patients already having cardiovascular diseases. Type 2 diabetes, obesity, depression and other chronic illnesses can be reduced by participating in regular exercise (Breslow, Ballard-Barbash, Munoz, & Graubarb, 2001; Knowler et al., 2002; Pollock, 2001; Slattery & Potter, 2002; Vuori, 2001; Wing & Hill, 2001).

The traditional approach to physical fitness follows the principle of no gain without pain. Exercise programs are designed to be vigorous enough to keep the heart rate up in the target zone in order to burn calories. The CDC provides guidelines for making physical activity and fitness a part of daily life. The CDC (2014) defined physical activity as anything that gets the body moving. They emphasize that there are two forms of physical activity to improve health—aerobic and muscle strengthening.

When defining the amount of physical activity or exercise, two factors must me taken into consideration—the total amount of activity and the intensity level at which the activity is performed (CDC, 2014). The CDC (2014) stated that adults need the following:

> [One hundred fifty] minutes a week of moderate-intensity aerobic activity (i.e., brisk walking) or 75 minutes of vigorous-intensity aerobic activity (i.e., jogging or running) and muscle-strengthening activities on two or more days a week that work all major muscle groups (legs, hips, back, abdomen, chest, shoulders, and arms). Moderate-intensity aerobic activity means working hard enough to raise the heart rate and break a sweat. (para. 2)

The CDC (2014) indicated one way to tell if a moderate level of exercise is in one's regimen is that the person will be able to talk, but not sing the words to his or her favorite song. Some examples of activities that require moderate effort are walking fast, water aerobics, riding a bike on level ground or few hills, playing doubles tennis, and pushing a lawn mower.

According to the CDC (2014), vigorous-intensity aerobic activity means breathing hard and fast, and that the heart rate has gone up quite a bit. Working at this level means one would "not be able to speak more than a few words without pausing for a breath" (para. 5). Activities that require vigorous effort are jogging or running, swimming laps, riding a bike fast or on hills, playing singles tennis, or playing basketball.

The CDC (2014) stipulated that one could "do moderate-or vigorous-intensity aerobic activity, or a mix of the two each week. A rule of thumb is that one minute of vigorous-intensity activity is about the same as two minutes of moderate-intensity activity" (para. 5).

Although aerobic exercises are good for one's heart and lungs, they generally do not work the upper body, where more than half of a person's muscles are located. Muscle-

strengthening activities should work all the major muscle groups (legs, hips, back, chest, abdomen, shoulders, and arms). To gain health benefits, muscle-strengthening activities need to be done to the point where it is hard to do another repetition without help (CDC, 2014). A repetition is one complete movement of an activity, like lifting a weight or doing a sit-up. One set is 8-to-12 repetitions per activity (CDC, 2014). Two or three sets provide optimal benefits. Movements that strengthen muscles can be done on the same or different days that you do aerobic activity. However, muscle-strengthening activities do not constitute aerobic activity.

Psychological Benefits

The psychology of exercise involves the examining of the relationships between physical movement and one's beliefs and emotions (Buckworth & Dishman, 2002). The psychological values of physical activity are studied to determine the effects of exercise on mental health. Walsh (2011), in a recent review of psychological literature, underscored the importance of valuing health as a lifestyle, and not merely a component of one's life, which promotes physical and psychological health. A healthy lifestyle promotes the ability to properly function, adapt, and engage in day-to-day demands at work and home. Studies have shown that people who participate in aerobic activity can benefit from a reduction in anxiety, depression, tension, and stress (Brandon & Loftin, 1991). Although the research is heavier in the area of physical health benefits, rising evidence has suggested that benefits in cognitive performance and affective experience could be gleaned through exercise. Another study suggested that exercise benefits affective experience and cognitive performance (Hogan, Mata, & Carstensen, 2013). Moderate and vigorous exercise stretches ranging from five-to-30 minutes are associated with improved psychological well being and positive affective responses (Barton & Petty, 2010).

Exercise is beneficial for multiple health reasons (CDC, 2014). Exercising increases energy levels, lowers blood pressure, strengthens the heart, improves muscle-tone, builds bone density, and reduces body fat. Emotional benefits can be gained from exercise, as well. Studies have shown that individuals who exercise regularly gain a positive lift in mood and experience lower rates of depression (Vasile, 2013). Vasile (2013) discussed an association between exercise and reductions in physiological measures of stress and psychological measures such as anxiety and depression. Regular exercise brings notable changes to the body, metabolism, heart, and emotional state. Exercise can provide exhilaration, relaxation, stimulation and calmness. It can also defy depression and drive away stress (Fox, 1999). Stress hormones, such as adrenaline and cortisol, can be reduced by exercising. The production of endorphins is stimulated during exercise. Endorphins are responsible for the positive feelings that accompany many hard workouts (Harvard Health Publications, 2011). A few studies have shown that by engaging in a single exercise session, one can reduce tension in muscles of the face, arms, and legs, as measured by electromyography (EMG) after exercise (Smith & Crabbe, 2000).

Researchers have found that college students who incorporate exercise in their daily lives generate increased positive affect (Giacobbi, Hausenblas, & Frye, 2005), as do young adults with major depressive disorder (Mata et al., 2012). Overall, the literature supports some effect of exercise on reducing the primary risk of depression and alleviating symptoms in individuals diagnosed as having mild to moderate depression. In some studies, reductions in depression after exercise training have been as great as those seen after psychotherapy or drug therapy (Buckworth & Dishman, 2002). Improvements in cognitive performance are also linked with exercise. In an evaluation of 43 studies evaluating performance on a variety of cognitive tasks following single, acute periods of exercise, exercise has been associated with improvements in

intellectual performance in young adults for tasks varying from simple response time to response inhibition to creative thinking (Tomporowski, 2003).

Self-efficacy for exercise moderates the effect of exercise on mood, such that higher self-efficacy is associated with positive mood during and after exercise (Bozoian, Rejesk, & McAuley, 1994). Tomporowski (2003) further noted that supporters of exercise reported that brief stints of physical exercise helped their psychological well-being by allowing them to think more clearly and improving their mood. An intense session of exercise can positively affect mood states (Morgan & O'Connor, 1988). A review conducted by experts from the National Institute of Mental Health determined that exercise positively related to numerous signs of mental health (Morgan, 1984). Further, exercise has been associated with elevations in mood states and heightened psychological well-being (Berger, 1996).

Many people who exercise for recreation have noticed a calming effect from a hard workout. The research literature has supported exercise's playing a role in reducing anxiety (Buckworth & Dishman, 2002). A temporary reduction in one's state of anxiety after intense exercise has been reported in quantitative appraisals of studies conducted on adults without anxiety disorders (Landers & Petruzzello, 1994). Acute exercise can decrease state of anxiety as effectively as other traditional treatments such as medication (Buckworth & Dishman, 2002).

Although most people are cognizant of the physical and emotional advantages of working out, the social benefits of exercise are also important. Exercise affords the opportunity to connect and interact with others while developing a healthy mind and body. McCoy (2014) suggested that many types of exercise exist for developing a physical body that enhances self-confidence. Being active provides opportunities to meet people of like interest and who enjoy

being active. Exercise provides opportunities to take a step back from work and family obligations in order to make friends and build networks (Harvard Health Publications, 2011).

Exercise has the power to change self-image. Anecdotal accounts of why people exercise often include reports of improvements in self-concept and self-esteem. Self-esteem is an important concept of the social sciences and everyday life. Generally, the effects of exercise on self-esteem are strongest for those lowest in initial self-esteem (Buckworth & Dishman, 2002). Buckworth and Dishman (2002) concluded that effects from physical activity or exercise are specific; they influence perceptions of physical performance ability.

Self-Efficacy

Self-efficacy is an evaluation of one's ability to successfully perform and implement the behaviors that are required to produce desired results (Gist & Mitchell, 1992). Bandura (1977) expanded and refined this definition by indicating that self-efficacy is a form of self-confidence that is situation-specific. Self-confidence and self-efficacy are not identical theoretically. McCormick, Tanguma, and López-Forment (2002) stated that confidence refers to a general sense of competence. In contrast, he further explained that self-efficacy is a personal belief, a self-judgment about one's task specific capabilities.

Bandura and Locke (2003) defined self-efficacy theory as a cognitive theory of motivation. This concept emphasizes an individual's belief that he or she can successfully perform a given task (Bandura & Locke, 2003). Management experts and practitioners alike have embraced the self-efficacy theory due to the potential application to daily operations in the workplace (Stajkovic & Luthans, 1998). Burns (2010) explained that those individuals who exhibited positive self-efficacy tended to successfully complete the present task, and those who exhibited negative self-efficacy tended to not complete the task when it became too difficult. A

self-fulfilling prophecy occurs because the idea becomes a reality simply because someone believes them. Burns (2010) positioned that when leaders understand how important self-efficacy is in motivation, team effectiveness, and performance levels, they can foster a climate of self-efficacy among the staff members.

Judgments of self-efficacy play a role in the amount of effort people put forth and how long they will continue when found in undesirable experiences (Bandura, 1977). People who have grave doubts about their abilities tend to not put as much effort and may even give up altogether, whereas those who possess a high degree of positive efficacy put out greater effort to accomplish the goal or job at hand (Bandura & Schunk, 1981).

Research has suggested there is an association in feelings of greater self-efficacy with improved performance in academic achievement (Pajares, 1996), athletic competition, and performance in the workplace (Kane, Marks, Zaccaro, & Blair, 1996; Stajkovic & Luthans, 1998). Several studies (Gist, 1989; Hill, Smith, & Mann, 1987; Stumpf, Brief, & Hartman, 1987) showed that self-efficacy is related to numerous work-performance ratings such as adaptability to technology, coping with career-related events, and managerial idea generating. According to studies on self-efficacy theory, the goals people choose, their aspirations, and how much effort they will put forward on a given task are all influenced by personal efficacy (Maurer, 2001). Maurer's position is that individuals who possess positive self-efficacy are motivated, persistent, goal-oriented, resilient, and clear thinking.

School principals are being asked to readily and willingly respond to changing mandates. School leaders need to be in a perpetual state of assessing how and what things can be done to ensure staff buy-in regarding achievement and goals. Staff members' perceptions of their principals are crucial to employee buy-in and productivity (Neck, Mitchell, Manz, & Thompson,

2004). Paglis and Green (2002) believed that views of leadership self-efficacy are a valuable foundation of a manager's motivation for tackling the difficult tasks in initiating change in the workplace. Their study's main hypothesis was that leaders in high positions would engage in more leadership attempts, compared to self-doubters. Mostly supportive findings were discovered. This implied that an organization can help foster managers' positive self-efficacy for tackling daily challenges (Paglis & Green, 2002).

Summary

In summary, this review of literature was categorized into seven groups that provide the appropriate context for this study. These included challenges in K-12 education, effective leadership, educational leadership, leadership and development programs, fitness in leadership, exercise benefits, and self-efficacy. Because today's school leaders are faced with many challenges and pressures, shortchanging any dimensions of their physical well-being can take its toll on their lives and work. The literature spoke to the roles, responsibilities, and demands of the principalship. The review also communicated the essential elements of leadership and educational leadership. These elements are easier demonstrated or performed when leaders are personally fit and equipped with physical stamina (Gupton, 2003).

CHAPTER 3

METHODOLOGY

Research methodology including design, research questions, null hypotheses, data sources, population of the study, sample selection, data collection processes, the instruments to be used, and data analysis, are discussed in Chapter 3. The purpose of this quantitative study was to explore whether regular physical exercise has a relationship with successful school leadership. This research also serves to articulate for leadership development programs and models the necessary components of fitness reported by school leaders that cultivate instructional leadership, building management, interpersonal relationships and self-efficacy in their daily professional responsibilities.

Design

Quantitative research determines the relationships between independent variables and dependent variables in the population (Field, 2009). Quantitative research designs can be descriptive or inferential, which establish links among variables, or experimental, which explain causality (Field, 2009). In this study, the data on principals exercise habits and levels of best practices and self-efficacy were collected by the use of a survey. No interaction took place with the individual participants in the study. Multiple regression analysis is a statistical instrument for understanding the relationship between two or more variables (Field, 2009). In this study, multiple regressions was used to look at what degree the independent variables (minutes of

aerobic exercise, intensity of aerobic exercise, minutes of strength-training exercise, intensity of strength-training exercise) and/or combinations of these independent variables were predictive of self-efficacy ratings and frequency levels of best practices from principals. Multiple regression is appropriate whenever quantitative variables (self-efficacy ratings and frequency levels of best practices) are to be examined in relationship to any other factors (minutes of aerobic exercise, intensity of aerobic exercise, minutes of strength-training exercise, intensity of strength-training exercise).

In this study, the main question asked if there was a relationship between principals' exercise habits and elements of best practices in their professional performance. The data on principals' exercise habits and leadership effectiveness were collected extensively through the use of survey methodology. Descriptive analysis provided information regarding the levels of exercise, self-efficacy, and best practices, and inferential analysis, in particular multiple regression analysis, assessed the predictive relationships between some or all of the independent variables with the dependent variables.

Research Questions

This study sought to answer one main research question: Is there a relationship between principals' exercise habits and elements of best practices in their professional performance?

Descriptive Subquestions

1. What are the levels of exercise displayed by principals in terms of aerobics and strength training?
2. What are the levels of self-efficacy reported by practicing principals in targeted areas of job performance (instructional leadership, building management, and development of social capital) at varying exercise levels and regimens?

3. What are the levels of best practices displayed by principals in targeted areas of job performance (instructional leadership, building management, and development of social capital) at varying exercise levels and regimens?

Inferential Subquestions

1. Do minutes per week and/or intensity of aerobic exercise and/or strength training predict a significant proportion of the variance in principals' self-efficacy in targeted domains of job performance (instructional leadership, building management, and development of social capital)?
2. Do minutes per week and/or intensity of aerobic exercise and/or strength training predict a significant proportion of the variance in principals' use of best practices in targeted domains of job performance (instructional leadership, building management, and development of social capital)?

Given an analysis of the questions above, this study was able to explore the varying degrees to which aerobic exercise and strength training bear relationship with leadership self-efficacy and frequency of use of best practices.

Null Hypotheses

Inferential Subquestion 1 $H_0$1. There is no relationship between minutes per week and/or intensity of aerobic exercise and/or strength training and principals' self-efficacy in targeted domains of job performance (instructional leadership, building management, and development of social capital).

Inferential Subquestion 2 $H_0$2. There is no relationship between minutes per week and/or intensity of aerobic exercise and/or strength training and principals' use of best practices in

targeted domains of job performance (instructional leadership, building management, and development of social capital).

Population and Sample

The population of the study participants included 1,923 non-charter, non-virtual Indiana public school principals. The email addresses of the participants were obtained through the Public Records Department of the IDOE. All of these principals were recruited to participate in this study. My sample was derived from this population and included all in the population who desired to participate in the study.

Recruitment

All 1,923 Indiana public school principals were recruited to participate, through email addresses provided by the IDOE, as this was the most current list of building principals. Emails were sent individually to all participants. Each email included the following information:

- A letter of introduction that included a general explanation of the research topic, the purpose of the research, information of interest to potential participants regarding the study's data collection procedures, my name and faculty sponsor, statement regarding potential risk or non-risk, and contact information for both my faculty sponsor and myself.
- An Informed Consent document, which contained the purpose of the research project, a brief description of the survey and approximate time to complete, and the merits of the study. Information was also included on how the potential participants could contact me if they wished to discuss the study or the process of Informed Consent in more detail. An explanation was also included regarding the intended anonymous nature of survey, yet with a disclaimer that absolute anonymity could not guaranteed

with online, Internet-based surveys, as per the policy guide of the Indiana State University Institutional Review Board. The intent was that no one, including the primary investigator, would be able to identify the participants or their answers and no one would know who participated in the study. A statement was given to potential participants regarding the fact that participation was voluntary, that all participants' information would be kept confidential, that all participants could withdraw at any time before submitting their responses electronically, and that the primary investigator would be unable to identify their responses.

- After reviewing the data collected during two-week period of time, the primary investigator prepared a follow-up recruitment communication in the form of an email. This included the original information, a friendly reminder on the importance of the research, and a thank you to those who had already participated.

Data Collection Process

Data were collected from all Indiana public school principals who decided to participate in the study. The data collection utilized the Qualtrics web-based survey solutions. The survey asked all principals questions regarding their exercise habits and leadership effectiveness (Appendix A).

The data collection process actually started when each principal received an invitation to participate in the survey via email, along with the letter of recruitment and informed consent information. The email provided a link they clicked which took participants to the online survey. This survey, again, provided detailed informed consent information at the outset. The participants then answered 42 questions that took approximately 10 minutes. These questions pertained to exercise habits, self-efficacy, frequencies of best practices, and also allowed for

participants to provide thoughts. In the event they wished to discontinue, they simply closed their browsers, and their answers would not be tabulated. Those who completed the survey clicked submit. The primary investigator then received the results in the Qualtrics account upon log-in at Indiana State University.

After a two-week period, principals received a follow-up email expressing thanks to those who participated in the study or a reminder to respond to the survey for those who had not. This follow-up email was the last correspondence to the principals regarding the survey. Once collected, the results were used to examine the descriptive information about frequencies of exercise habits, levels of self-efficacy, elements of best practices, and relationships between exercise habits and levels of self-efficacy and elements of best practices.

Instrumentation

The primary research instrument was a researcher-developed and validated questionnaire consisting of 42 questions relative to participants' frequency of aerobic exercise, strength training, and leadership best practices (Appendix A). A two-strategy method of instrumentation was utilized in this study—a researcher-developed survey and an existing/validated survey.

The researcher-developed survey allowed for collection of the descriptive data and personalized accounts of the minutes and intensity of the principals' exercise habits in aerobic and strength-training exercises. The existing/validated survey that was used was the NEOS™ Efficacy Outcomes System. This portion of the survey measured principals' self-efficacy in instructional leadership, building management, and social capital. NEOS™ was developed by Next Element (2013) with Nate Regier, Ph.D., as the principal investigator (Appendix B). The NEOS™ assesses levels of self-efficacy—persistence, resourcefulness, and openness—in the three leadership domains (i.e., in a principal's instructional leadership, building management,

and development of social capital). Three of the instrument's questions measure one's openness (acceptance, self-confidence, self-awareness, trust, empathy), three questions measure resourcefulness (creativity, flexible problem-solving, resiliency), and three questions measure persistence (courage, perseverance, dependability, accountability) in order to measure overall self-efficacy (Next Element, 2013). The statements in the survey are behaviorally focused, not focused on attitudes, values, or beliefs and can be reviewed on the study's instrument, available in Appendix A.

Survey Validity

Creswell (2009) stated that validity in an instrument is established when meaningful inferences from scores can been drawn. Face validity refers to the magnitude to which a test or the questions on a test seem to measure a particular construct as examined by laypersons, clients, and other stakeholders (College Board, 2014). In other words, the test appeared reasonable and accurate for the purpose it was being used. The face validity of the researcher-developed instrument was established in this study by using a panel of doctoral students at Indiana State University. These students were given the survey questions and asked the following questions: (a) Were the questions clear and easily able to be answered? (b) Was the length of survey acceptable? and (c) Was it relevant to research?

Content validity speaks to the tie between test questions and the content or subject area they are intended to assess (College Board, 2014). This study contained two components to the instrument. One component was a researcher-developed survey and the other was the NEOS™. The content validity of the self-made portion of the survey regarding elements of best practices in instructional leadership was assessed was confirmed by using literature from King (2002). King's observations led to describing essential tasks in instructional leadership. These tasks use

data to support/ensure student achievement and improve teaching by helping teachers improve their instructional practices. Marzano et al. (2005) confirmed this as well in their 21 responsibilities. Number 14 of these responsibilities noted continually mentoring the effectiveness of the school's curricular, instructional, and assessment practices, and Number 11 discussed the school leader and ensured that faculty and staff were aware of the most current theories and practices regarding effective schooling. Two questions in the survey related to these two tasks, and the Indiana State University Ph.D. residency cohort group 26 assisted in validating this.

NEOS™ was validated in its content through a comparative analysis with two already validated and established surveys that measured similar things: the General Self-efficacy Scale (GSE) and Snyder's Hope Scale (Next Element, 2013). It was found through the NEOS™ instrument development process that NEOS™ and GSE were very closely related and measured similar things. Overall, NEOS™ and Hope are significantly related, suggesting that the more efficacious a person is, the more hopeful they are (Next Element, 2013). The relationship between NEOS™ and Hope was consistent in terms of established standards of validity in the scientific community

The content validity of the self-made portion of the survey regarding elements of best practices in building management was met by using literature from Gupton (2003). Gupton identified principal behaviors from higher achieving schools regarding building management. One of the behaviors was associated with the principal establishing a safe and orderly environment with a clear discipline code. Another behavior was associated with the principal recognizing professional accomplishments of faculty including basic goal attainment in promoting overall positive morale. Sergiovanni (2007) and Portin (2004) confirmed this, too, in

their literature of leadership found in all schools. One role or function was managerial leadership; this is the supervision of the operations of the school, which includes the safety and discipline of the students and staff. Another role or function is strategic leadership – encompassing vision, mission, and goals, as well as developing ways to reach them. Two questions in the survey were related to these two behaviors. Again, the doctoral students from Indiana State University's Ph.D. residency cohort group 26 assisted in validation.

The content validity of the self-made portion of the survey regarding elements of best practices in social capital was met by using literature from Leana and Pil. Leana and Pil (2006) and Pil and Leana (2009) looked at social capital and its relationship to successful schools. The findings showed that both internal and external social capital were significant correlated with student success on achievement tests. Leana (2011) provided more support for educators to spend more time collaborating with outside supporters to build social capital within schools in her review of the missing link in school reform. One question was included on the survey regarding internal social capital and one question regarded external social capital. The Indiana State University's Ph.D. residency cohort group 26, again, played a key role in validation.

Survey Reliability

Creswell (2009) described reliability as consistency of the measurement. Are the items' responses consistent across constructs? Are scores constant over time when the instrument is ran a second time? Using Pearson correlation, the 9-item NEOS™ assessment showed internal consistency reliability of 0.90. In peer-reviewed research, 0.9 is a gold standard that is rare with short surveys such as the NEOS™ (Grimm & Yarnold, 2005). A reliability analysis was not performed on the other parts of the instrument, as this would be more pertinent to its use over time, as opposed to the first research study of which it measured potential outcomes.

Study Variables

A variable refers to a feature or attribute of an individual or a group that can be observed or measured. A variable can also vary among the individuals or group being studied (Creswell, 2009). Variables can be measured or assessed on a scale. In this study, the independent variable was a principal's regular exercise. An independent variable is a variable that influences or affect outcomes (Creswell, 2009). The dependent variables in this study were self-efficacy and elements of best practices. Dependent variables depend on the independent variables; they are the results or outcomes of the impact of the independent variable (Creswell, 2009). In this study it was determined if minutes of aerobic exercise, intensity of aerobic exercise, minutes of strength-training exercise, and/or intensity of strength-training exercise (independent variables) related to the elements of best practices-instructional leadership, elements of best practices-building management, elements of best practices-social capital, self-efficacy rating in instructional leadership, self-efficacy rating in building management, and/or self-efficacy in social capital (dependent variables).

Data Analysis

Descriptive analyses were utilized in the study, as were inferential analyses. Multiple regression allowed me to learn more about the relationship between several independent variables (exercise habits) and dependent variables (elements of best practices and self-efficacy ratings). It also helped to understand which among the independent variables had any predictive relationship to the dependent variables and to explore the forms of these relationships, if they were found to exist.

For this study, descriptive analysis were utilized to answer the following research questions:

1. What are the levels of exercise displayed by principals in terms of aerobics and strength training?
2. What are the levels of self-efficacy reported by practicing principals in targeted areas of job performance (instructional leadership, building management, and development of social capital) at varying exercise levels and regimens?
3. What are the levels of best practices displayed by principals in targeted areas of job performance (instructional leadership, building management, and development of social capital) at varying exercise levels and regimens?

Multiple regression analyses were used to analyze the following research questions:

1. Do minutes per week and/or intensity of aerobic exercise and/or strength training predict a significant proportion of the variance in principals' self-efficacy in targeted domains of job performance (instructional leadership, building management, and development of social capital)?
2. Do minutes per week and/or intensity of aerobic exercise and/or strength training predict a significant proportion of the variance in principals' use of best practices in targeted domains of job performance (instructional leadership, building management, and development of social capital)?

The research protocol steps and methods for data analysis were as follows:

1. Descriptive information was tabulated and reported from the sample population including number of participants and number of non-returned surveys. A table was provided with percentages describing the respondents.

2. The means, standard deviations, and range of scores for the variables were examined. SPSS was used to conduct a descriptive analysis of data for all independent and dependent variables.
3. The score of the NEOS™ was analyzed. The means, standard deviations, Cohen's D effect size, and Hedges G effect size were examined.

Multiple regression then looked at all four independent variables (minutes of aerobic exercise, minutes of strength-training exercise, intensity of aerobic exercise, intensity of strength-training exercise) with respect to each of the six dependent variables (self-efficacy rating in instructional leadership, self-efficacy in building management, self-efficacy in social capital, elements of best practices in instructional leadership, elements of best practices in building management, elements of best practices in social capital). Multiple regression also allowed for a look at different combinations of these four variables with respect to each of the three dependent variables.

After these steps and methods, the findings of the study were reported based upon the information gathered as a result of the methodologies applied. The forthcoming results section in Chapter 4 simply states the findings without bias or subjective interpretation and utilized APA format to report and describe the sample, statistical significance testing, confidence intervals, and effect sizes in regarding the research questions. Chapter 5 includes the conclusions, implications, and recommendations for further study of the results.

Summary

Chapter 3 presented the research design, research questions, null hypotheses, population and sample, recruitment, data collection process, instrumentation, study variables, and data analysis. A quantitative study was conducted to identify if a relationship existed between

principals' exercise habits and elements of best practices in professional performance. Indiana public school principals were surveyed to gain information regarding their exercise habits, frequencies in elements of best practices, and ratings of self-efficacy. Chapter 4 reflects the results of the data collected from the surveys including descriptive analysis and multiple regression among the principals. Chapter 5 presents the results that express the bearing of the study and suggestions for future studies.

CHAPTER 4

DATA ANALYSIS

The purpose of this quantitative study was to explore whether regular physical exercise has a relationship with successful school leadership. An analysis was prepared to determine what relationships exist between exercise habits and leadership effectiveness. The exercise habits examined were minutes per week and/or intensity of aerobic exercise, minutes per week and/or intensity of strength-training exercise, and any combination of minutes and/or intensity of exercise, strength training, or both.

Statistical analysis of the data included descriptive data and presented analysis for Inferential Subquestions 1 and 2 the following research questions:

1. Do minutes per week and/or intensity of aerobic exercise and/or strength training predict a significant proportion of the variance in principals' self-efficacy in targeted domains of job performance (instructional leadership, building management, and development of social capital)?
2. Do minutes per week and/or intensity of aerobic exercise and/or strength training predict a significant proportion of the variance in principals' use of best practices in targeted domains of job performance (instructional leadership, building management, and development of social capital)?

Multiple regression analysis was conducted to determine if any of the variables—minutes of aerobic exercise, intensity of aerobic exercise, minutes of strength-training exercise, intensity of strength-training exercise—could be used to predict principals' levels of self-efficacy and/or elements of best practices.

This chapter provides a description of the data and presents the results of the study. It is organized into the following sections: descriptive data, summary exercise habits and analysis of the hypotheses, and summary of the findings. The descriptive data section addresses the characteristics of the exercise habits from the respondents. The summary results section addresses the findings for Inferential Subquestions 1 and 2.

Descriptive Data

All public school principals in the state of Indiana were invited to participate in the study. A total of 1,923 were offered the opportunity to participate in this study. Of the 1,923 public school principals, 227 responded to the survey, representing 11.8% of all public school principals in the state of Indiana.

Principal Respondent Characteristics

The population of public school principals who participated in this survey represented the public school principals across the state of Indiana. A total of 227 principals, out of the 1,923 surveyed, responded to the survey.

Respondents by gender. Within the population who responded to the survey, 127 men (55.9%) and 99 women (43.6%) responded, with one not reporting his or her gender.

Respondents by age. Principals between 30-39 years of age made up 19.8% of the sample; principals between 40-49 years of age made up 38.3% of the sample, principals between

50-59 years of age made up 31.7% of the sample, and principals over the age of 60 made up 10.1% of the sample. One respondent did not report an age.

Respondent by level of position responsibility. Within the sample of public school principals, 122 elementary principals (53.7%), 36 middle/junior high principals (15.9%), and 69 high school principals (30.4%) responded.

Descriptive Summary of Exercise Habits of Principals

Data from the 227 principals who participated in this survey represented are presented in this section. Principals exercise habits are looked at in terms of minutes per week, and intensity, age, building level, and gender.

Principals exercise habits in terms of minutes per week and intensity. The first section of the survey dealt with the minutes and intensity of aerobic and strength-training exercise. The results addressed Descriptive Sub-question 1, which asked, "What are the levels of exercise displayed by principals in terms of aerobics and strength-training?" Respondents were able to report the number of minutes per week spent on aerobic exercise and strength-training exercise. A total of 227 principals responded to the survey item. Respondents indicated an average of 77 minutes ($M = 76.85$, $SD = 87.32$) of aerobic exercise per week. Minutes ranged from 0 to 400. In the area of strength training, respondents indicated an average of 25 minutes ($M = 25.19$, $SD = 46.68$) per week. Minutes ranged from 0 to 300.

Respondents were also asked about the intensity of their aerobic exercise and strength training. Sixty-four (28.2%) respondents indicated they did not participate in aerobic exercise, 133 (58.6%) respondents reported moderately, and 30 (13.2%) respondents reported vigorously. In the area of strength training, 126 (55.5%) respondents indicated they did not engage, 87 (38.3%) responded moderately, and 14 (6.2%) responded vigorously.

Principals exercise habits in terms of age. Forty-five of the respondents were in the 30-39 age range. Table 1 shows the breakdown of exercise habits for principals in the 30-39 age group. In the area of aerobic exercise, the following were reported: 11 (24.4%) did not participate, 26 (57.8%) participated moderately, and eight (17.8%) participated vigorously. This group averaged 81 minutes (M = 81.00, SD = 89.71) of aerobic exercise per week. In strength training, the following were reported: 20 (44.4%) did not engage, 18 (40.0%) engaged moderately, and seven (15.6%) vigorously. This age group averaged 27 minutes (M = 27.27, SD = 41.74) of strength training per week.

Table 1

Aerobic and Strength Training for 30-39 Age Group

Age	Aerobic Exercise			Strength Exercise		
30-39	None	Moderate	Vigorous	None	Moderate	Vigorous
	24.4%	57.8%	17.8%	44.4%	40.0%	15.6%
	Average of aerobic exercise: 81.00 minutes			Average of strength exercise: 27.27 minutes		

Note. (n = 45)

Eighty-seven respondents were in the 40-49 year old age range. Table 2 shows the breakdown of exercise habits for principals in the 40-49 age group. In the area of aerobic exercise, the following were reported: 24 (27.6%) respondents did not participate, 53 (60.9%) respondents participated moderately, and 10 (11.5%) respondents participated vigorously. This group averaged 72 minutes (M = 72.00, SD = 82.29) of aerobic exercise per week. In strength training, the following were reported: 52 (59.8%) respondents did not engage, 34 (39.1%)

respondents engaged moderately, and one (1.1%) respondent engaged vigorously. This age group averaged 22 minutes (M = 21.92, SD = 43.06) of strength training per week.

Table 2

Aerobic and Strength Training for 40-49 Age Group

Age	Aerobic Exercise			Strength Exercise		
40-49	None	Moderate	Vigorous	None	Moderate	Vigorous
	27.6%	60.9%	11.5%	59.8%	39.1%	1.1%
	Average of aerobic exercise: 72.00 minutes			Average of strength exercise: 21.90 minutes		

Note. (n = 87)

Seventy-two respondents were in the 50-59 year old age range. Table 3 shows the breakdown of exercise habits for principals in the 50-59 year old age group. In the area of aerobic exercise, the following were reported: 21 (29.2%) respondents did not participate, 41 (56.9%) respondents participated moderately, and 10 (13.9%) respondents participated vigorously. This group averaged 89 minutes (M = 88.56, SD = 93.12) of aerobic exercise per week. In strength training, the following were reported: 42 (58.3%) participants did not engage, 25 (34.7%) participants engaged moderately, and five (6.9%) participants engaged vigorously. This age group averaged 26 minutes (M = 25.89, SD = 48.32) of strength training per week.

Table 3

Aerobic and Strength Training for 50-59 Age Group

Age	Aerobic Exercise			Strength Exercise		
50-59	None	Moderate	Vigorous	None	Moderate	Vigorous
	29.2%	56.9%	13.9%	58.3%	34.7%	6.9%
	Average of aerobic exercise: 89.00 minutes			Average of strength exercise: 25.90 minutes		

Note. (n = 72)

Twenty-three respondents were in the 60+ age range. Table 4 shows the breakdown of exercise habits for principals in the 60+ age group. In the area of aerobic exercise, the following were reported: Eight (34.8%) respondents in this age range indicated they did not participate in aerobic exercise, 13 (56.5%) respondents indicated they participated moderately, and two (8.7%) respondents indicated they participated vigorously. This group averaged 51 minutes (M = 50.91, SD = 80.95) of aerobic exercise per week. In the area of strength training, the following were reported: 12 (52.2%) participants did not engage, 10 (43.5%) participants engaged moderately, and one (4.3%) participant engaged vigorously. This age group averaged 31minutes (M = 31.30, SD = 63.43) of strength training per week.

Table 4

Aerobic and Strength Training for 60 + Age Group

Age	Aerobic Exercise			Strength Exercise		
60+	None	Moderate	Vigorous	None	Moderate	Vigorous
	34.8%	56.5%	8.7%	52.2%	43.5%	4.3%
	Average of aerobic exercise: 51.00 minutes			Average of strength exercise: 31.3 minutes		

Note. (n = 23)

Findings per age group for type of exercise showed the 30-39 age group had the highest numbers in vigorous aerobic exercise (17.8%) and vigorous strength exercise (15.6%). Principals in the 40-49 age range displayed the greatest marks in not exercising in strength (59.8%) and moderate aerobic exercise (60.9%). Principals in the 50-59 year age group exhibited the highest average of minutes in aerobic exercise (88.56). In the age range of 60+, principals indicated the greatest marks in average of minutes in strength exercise (31.30) and not exercising in aerobics (34.8%).

Principals exercise habits in terms of building level. One hundred twenty-two respondents were elementary level principals. Table 5 shows the exercise habits for aerobic and strength training exercise for elementary principals. In the area of aerobic exercise, the following were reported: 34 (27.9%) respondents did not participate, 74 (60.7%) respondents participated moderately, and 14 (11.5%) respondents participated vigorously. This group averaged 77 minutes (M = 77.20, SD = 82.03) of aerobic exercise per week. In the area of strength training, the following were reported: 67 (54.9%) participants did not engage, 48 (39.3%) participants engaged moderately, and seven (5.7%) participants engaged vigorously.

This group averaged 28 minutes (M = 28.17, SD = 51.20) of strength training per week.

Table 5

Aerobic and Strength Training for Elementary Principals

Building Level	Aerobic Exercise			Strength Exercise		
Elem	None	Moderate	Vigorous	None	Moderate	Vigorous
	27.9%	60.7%	11.5%	54.9%	39.3%	5.7%
	Average of aerobic exercise: 77.20 minutes			Average of strength exercise: 28.17 minutes		

Note. (n = 122)

Thirty-six respondents were middle school level principals. Table 6 shows the exercise habits for aerobic and strength training exercise for middle school principals. In the area of aerobic exercise, the following were reported: 11 (30.6%) respondents did not participate, 19 (52.8%) respondents participated moderately, and six (16.7%) respondents participated vigorously. This group averaged 77 minutes (M = 77.31, SD = 102.70) of aerobic exercise per week. In the area of strength-training the following were reported: 19 (52.8%) participants did not engage, 15 (41.7%) participants engaged moderately, and two (5.6%) participants engaged vigorously. This group averaged 22 minutes (M = 22.25, SD = 34.38) of strength training per week.

Table 6

Aerobic and Strength Training for Middle School Principals

Building Level	Aerobic Exercise			Strength Exercise		
MS	None	Moderate	Vigorous	None	Moderate	Vigorous
	30.6%	52.8%	16.7%	52.8%	41.7%	5.6%
	Average of aerobic exercise: 77.31 minutes			Average of strength exercise: 22.25 minutes		

Note. (n = 36)

Sixty-nine respondents were high school level principals. Table 7 shows the exercise habits for aerobic and strength training exercise for high school principals. In the area of aerobic exercise, the following were reported: 19 (27.5%) respondents in this age range indicated they did not participate in aerobic exercise, 40 (58.0%) respondents participated moderately, and 10 (14.5%) respondents participated vigorously. This group averaged 76 minutes (M = 76.00, SD = 89.02) of aerobic exercise per week. In the area of strength training the following were reported: 40 (58.0%) participants did not engage, 24 (34.8%) participants engaged moderately, and five (7.2%) participants engaged vigorously. This group averaged 21 minutes (M = 21.45, SD = 43.98) of strength training per week.

Table 7

Aerobic and Strength Training for High School Principals

Building Level	Aerobic Exercise			Strength Exercise		
HS	None	Moderate	Vigorous	None	Moderate	Vigorous
	27.5%	58.0%	14.5%	58.0%	34.8%	7.2%
	Average of aerobic exercise: 76.00 minutes			Average of strength exercise: 21.45 minutes		

Note. (n = 69)

Findings per building level for type of exercise showed the elementary building level group had the highest numbers in average minutes in strength training (28.17) and moderate aerobic exercise (60.7%). Principals in the middle school displayed the greatest marks in average minutes in aerobic exercise (77.31), not participating in aerobic exercise (30.6%), moderate strength training exercise (41.7%), and in vigorous aerobic exercise (16.7%). High school principals exhibited the highest percentage of not participating in strength training exercise (58.0%) and in strength training vigorously (7.2%).

Principals exercise habits in terms of gender. One hundred twenty-seven of the respondents were men. Table 8 shows the breakdown of exercise habits for male principals. In the area of aerobic exercise, the following were reported: 30 (23.6%) indicated they did not participate in aerobic exercise, 76 (59.8%) participated moderately, and 21 (16.5%) participated vigorously. Men averaged 81 minutes (M = 81.01, SD = 89.62) of aerobic exercise per week. In the area of strength training the following were reported: 69 men (54.3%) did not engage, 49

(38.6%) men engaged moderately, and nine (7.1%) men engaged vigorously. This group averaged 27 (M = 26.63, SD = 50.24) minutes per week.

Table 8

Aerobic and Strength Training for Male Principals

Gender	Aerobic Exercise			Strength Exercise		
Men	None	Moderate	Vigorous	None	Moderate	Vigorous
	23.6%	59.8%	16.5%	54.3%	38.6%	7.1%
	Average of aerobic exercise: 81.01 minutes			Average of strength exercise: 26.63 minutes		

Note. (n = 127)

Ninety-nine respondents were women. Table 9 shows the breakdown of exercise habits for female principals. In the area of aerobic exercise, the following were reported: 34 (34.3%) female principals indicated they did not participate in aerobic exercise, 56 (59.6%) female principals participated moderately, and nine (9.1%) female principals participated vigorously. The female principals averaged 71 minutes (M = 70.82, SD = 84.55) of aerobic exercise per week. In the area of strength training, the following were reported: 56 (56.6%) female principals did not engage, 38 (38.4%) female principals engaged moderately, and five (5.1%) female principals engaged vigorously. The female principals averaged 24 (M = 23.60, SD = 42.05) minutes per week of strength training.

Table 9

Aerobic and Strength Training for Female Principals

Gender	Aerobic Exercise			Strength Exercise		
Women	None	Moderate	Vigorous	None	Moderate	Vigorous
	34.3%	59.6%	9.1%	56.6%	38.4%	5.1%
	Average of aerobic exercise: 70.82 minutes			Average of strength exercise: 23.60 minutes		

Note. (n = 99)

The findings in terms of gender for type of exercise showed men had the highest numbers in average minutes of aerobic (81.01), average minutes of strength training (26.63), vigorous aerobic exercise (16.5%) and vigorous strength exercise (7.1%). Female principals displayed the greatest marks in not exercising in aerobics (34.3%), not participating in strength (56.6%). In the area of moderate exercise for aerobic and strength training, there was virtually no difference between the two genders. Two-tenths of a percentage separated the genders.

Descriptive Summary of Efficacy Scores of Principals

In terms of self-efficacy ratings in the area of Instructional Leadership, those who did not participate in aerobic exercise had an average score of eight (M = 8.38, SD = .92), those who participated moderately had an average score of eight (M = 8.39, SD = .89), and those who were vigorous had nine (M = 8.63, SD = .85). In regard to intensity in strength training, those who did not engage had an average score of eight (M = 8.40, SD = .94), those who engaged moderately had eight (M = 8.41, SD = .85), and those who engaged vigorously had nine (M = 8.67, SD = .80).

In terms of self-efficacy ratings in the area of Building Management, those who did not participate in aerobic exercise had an average score of eight (M = 8.39, SD = 1.06), those who participated moderately had an average score of nine (M = 8.51, SD = .91), and those who were vigorous had an average score of nine (M = 8.76, SD = .74). In regard to intensity in strength training, those who did not engage had an average score of eight (M = 8.49, SD = .99), those who engaged moderately had an average score of nine (M = 8.52, SD = .89), and those who engaged vigorously had an average score of nine (M = 8.62, SD = .76).

In terms of self-efficacy ratings in the area of Social Capital, those who did not participate in aerobic exercise had an average score of eight (M = 8.25, SD = 1.16), those who participated moderately had an average score of eight (M = 8.44, SD = .91), and those who were vigorous had an average score of nine (M = 8.73, SD = 1.09). In regard to intensity in strength training, those who did not engage had an average score of eight (M = 8.35, SD = 1.07), those who engaged moderately had an average score of eight (M = 8.49, SD = .94), and those who engaged vigorously had an average score of nine (M = 8.65, SD = .93).

Table 10 shows comparative information regarding mean scores for self-efficacy ratings in each domain. Although all intensities of exercise had an average score of eight or higher, vigorous exercise produced an average score of a nine.

Table 10

Aerobic and Strength Training in Self-Efficacy Ratings

	Aerobic			Strength		
Domain	None	Moderate	Vigorous	None	Moderate	Vigorous
InsLdr	8.38	8.39	8.63	8.40	8.41	8.67
BldMgt	8.39	8.51	8.76	8.49	8.52	8.62
SocCap	8.25	8.44	8.73	8.35	8.49	8.65

Note. InsLdr = Instructional Leader, BldMgt = Building Management, SocCap = Social Capital

Descriptive Summary of Elements of Best Practice

In terms of elements of best practices in the area of Instructional Leadership, those who did not participate in aerobic exercise had an average score of eight (M = 7.87, SD = 1.68), those who participated moderately had an average score of eight (M = 8.11, SD = 1.63), and those who were vigorous had an average score of eight (M = 8.13, SD = 1.70). In regard to intensity in strength training, those who did not engage had an average score of eight (M = 7.89, SD = 1.65), those who engaged moderately had an average score of eight (M = 8.30, SD = 1.62), and those who engaged vigorously had an average score of eight (M = 7.79, SD = 1.81).

In terms of elements of best practices in the area of Building Management, those who did not participate in aerobic exercise had an average score of eight (M = 7.96, SD = 1.59), those who participated moderately had an average score of eight (M = 8.15, SD = 1.66), and those who were vigorous had an average score of nine (M = 8.53, SD = 1.16). In regard to intensity in strength training, those who did not engage had an average score of eight (M = 8.05, SD = 1.60),

those who engaged moderately had an average score of eight (M = 8.26, SD = 1.63), and those who engaged vigorously had an average score of eight (M = 8.32, SD = 1.17).

In terms of elements of best practices in the area of Social Capital, those who did not participate in aerobic exercise had an average score of eight (M = 8.00, SD = 1.58), those who participated moderately had an average score of eight (M = 8.33, SD = 1.40), and those who were vigorous had an average score of eight (M = 8.25, SD = 1.58). In regard to intensity in strength training, those who did not engage had an average score of eight (M = 8.10, SD = 1.55), those who engaged moderately had an average score of eight (M = 8.42, SD = 1.36), and those who engaged vigorously had an average score of eight (M = 8.11, SD = 1.40).

Table 11 shows comparative information regarding mean scores for elements of best practice in each domain. Although all intensities of exercise had an average score of 8 or higher, the scores of those who did not exercise in either category were lower.

Table 11

Aerobic and Strength Training in Elements of Best Practice

	Aerobic			Strength		
Domain	None	Moderate	Vigorous	None	Moderate	Vigorous
InsLdr	7.87	8.11	8.13	7.89	8.30	7.79
BldMgt	7.96	8.15	8.53	8.05	8.26	8.32
SocCap	8.00	8.33	8.25	8.10	8.42	8.11

Note. InsLdr = Instructional Leader, BldMgt = Building Management, SocCap = Social Capital

Inferential Findings and Analyses

Inferential subquestions 1 and 2 explored whether minutes per week and/or intensity of aerobic exercise and/or strength training predicted a significant proportion of the variance in a principal's self-efficacy rating and elements of best practice in targeted domains of job performance (instructional leadership, building management, and development of social capital). This section presents these findings in narrative form and with tables.

Inferential Statistics for Exercise and Efficacy

A multiple regression analysis was conducted to ascertain if minutes of aerobic exercise, minutes of strength training, intensity of aerobic exercise, and intensity of strength training predicted self-efficacy ratings in the area of instructional leadership. Assumptions for this multiple regression were met. The assumption for multicollinearity was met as the tolerance levels for predictors, which included minutes of aerobic exercise, minutes of strength training; intensity of aerobic exercise, and intensity of strength training, was above .2. The tolerance levels ranged from .42 to .65. The assumption of independent errors was met with a Durbin-Watson test score of 1.86. By observing the histogram of standardized residuals and the normal p-p plot of standardized residuals, it was determined that the data were normally distributed. The residuals aligned with the diagonal line on the plot. The scatterplot of standardized residuals showed that assumptions of linearity and homogeneity of variance were met. The plot showed a random pattern.

The multiple correlation coefficients showed the correlation (R = .10) between the observed and predicted values of minutes of aerobic exercise, minutes of strength training, intensity of exercise, and intensity of strength training for self-efficacy in instructional leadership, which represented a low correlation between the predictor variables and the self-

efficacy rating in instructional leadership. The multiple coefficient of determination (R^2) showed that .9% of the variance of the self-efficacy rating scores of principals could be explained by the set of predictor variables. When adjusted for sample size and number of predictors, the explained variance showed no change and remained .9%. The standard error of the estimate showed that the average residual distance from the regression line was .90 units of self-efficacy scores from the regression (prediction) line. Table 12 presents the descriptive statistics and correlations among the variables. Table 13 shows the model summary for self-efficacy scores in instructional leadership. The statistical finding was not significant, $R^2 = .01$, adjusted $R^2 = -.01$, $F(4, 221) = .52$, $p = .72$ (Table 14).

Table 12

Descriptive Statistics and Correlations – Instructional Leadership

Descriptor	SE Instruction	Min Aerobic	Min Strength	Int Aerobic	Int Strength
SE Instruction					
Min Aerobic	-.014				
Min Strength	.024	.401			
Int Aerobic	.071	.556	.388		
Int Strength	.043	.363	.711	.525	
M	8.418	76.850	24.190	.850	.50
SD	.898	87.320	44.310	.630	.61

Note. Min = minutes of aerobic exercise/strength training; Int = intensity of aerobics/strength training

Table 13

Model Summary: Statistics for Self-Efficacy Scores in Instructional Leadership

Criterion Var	*R*	R^2	Adjusted R^2	*SE* Estimate
Self-Eff Score	.097	.009	-.009	.901

Table 14

Regression Coefficients for Self-Efficacy Scores in Instructional Leadership

Variable	*B*	*SE*	*β*	*t*	*Sig*
Min Aerobic	<.00	.00	-.10	-.97	.333
Min Strength	.00	.00	.01	.07	.942
Int Aerobic	.15	.13	.11	1.21	.229
Int Strength	.02	.15	.01	.10	.920
(Constant)	8.34	.10		81.83	.000

Note. Min = minutes of aerobic exercise/strength training; Int = intensity of aerobics/strength training

A second multiple regression analysis was conducted to ascertain if minutes of aerobic exercise, minutes of strength training, intensity of aerobic exercise, and intensity of strength training predict self-efficacy ratings in the area of building management. Assumptions for this multiple regression were met. The assumption for multicollinearity was met as the tolerance levels for predictors, which included minutes of aerobic exercise, minutes of strength training, intensity of aerobic exercise, and intensity of strength training in this regression, was above .2. The tolerance levels ranged from .42 to .65. Assumption of independent errors was met with a

Durbin-Watson test score of 1.90. By observing the histogram of standardized residuals and the normal p-p plot of standardized residuals, it was determined that they were normally distributed. The residuals aligned with the diagonal line on the plot. The scatterplot of standardized residuals showed that assumptions of linearity and homogeneity of variance were met. The plot showed a random pattern.

The multiple correlation coefficient showed the correlation between the observed and predicted values of minutes of aerobic exercise, minutes of strength training, intensity of exercise, and intensity of strength training for self-efficacy in building management (R = .13) which represented a low correlation between the predictor variables with the self-efficacy rating in building management. The multiple coefficient of determination (R^2) showed that 1.6% of the variance of the self-efficacy rating scores of principals could be explained by the set of predictor variables. When adjusted for sample size and number of predictors, the explained variance showed no change and remained 1.6%. The standard error of the estimate showed that the average residual distance from the regression line was .94 units of self-efficacy scores from the regression (prediction) line. Table 15 shows the descriptive statistics and correlations among the variables. Table 16 shows the model summary for self-efficacy scores in building management. The statistical finding was not significant, R^2 = .02, adjusted R^2 = <.01, $F(4, 221) = .93$, p = .45 (Table 17).

Table 15

Descriptive Statistics and Correlations – Building Management

Descriptor	SE Bldg Mgt	Min Aerobic	Min Strength	Int Aerobic	Int Strength
SE Bldg Mgt					
Min Aerobic	.083				
Min Strength	.003	.401			
Int Aerobic	.115	.556	.388		
Int Strength	.028	.363	.711	.525	
M	8.510	76.850	24.190	.850	.50
SD	.938	87.320	44.310	.630	.61

Note. Min = minutes of aerobic exercise/strength training; Int = intensity of aerobics/strength training

Table 16

Model Summary: Statistics for Self-Efficacy Scores in Building Management

Criterion Var	*R*	R^2	Adjusted R^2	SE Estimate
Self-Eff Score	.128	.016	-.001	.939

Table 17

Regression Coefficients for Self-Efficacy Scores in Building Management

Variable	*B*	*SE*	*β*	*t*	Sig
Min Aerobic	.00	.00	.04	.52	.605
Min Strength	<.00	.00	-.05	-.52	.602
Int Aerobic	.18	.13	.12	1.32	.189
Int Strength	-.02	.16	-.01	-.12	.902
(Constant)	8.36	.11		78.73	.000

Note. Min = minutes of aerobic exercise/strength training; Int = intensity of aerobics/strength training

A third multiple regression analysis was conducted to ascertain if minutes of aerobic exercise, minutes of strength training, intensity of aerobic exercise, and intensity of strength training predict self-efficacy ratings in the area of social capital. Assumptions for this multiple regression were met. The assumption for multicollinearity was met as the tolerance levels for predictors, which included minutes of aerobic exercise, minutes of strength training, intensity of aerobic exercise, and intensity of strength training in this regression, was above .2. The tolerance levels ranged from .42 to .65. Assumption of independent errors was met with a Durbin-Watson test score of 1.95. By observing the histogram of standardized residuals and the normal p-p plot of standardized residuals, it was determined that they were normally distributed. The residuals aligned with the diagonal line on the plot. The scatterplot of standardized residuals showed that assumptions of linearity and homogeneity of variance were met. The plot showed a random pattern.

The multiple correlation coefficient showed the correlation between the observed and predicted values of minutes of aerobic exercise, minutes of strength training, intensity of exercise, and intensity of strength training for self-efficacy in social capital (R = .14) which represented a low correlation between the predictor variables with the self-efficacy rating in social capital. The multiple coefficient of determination (R^2) showed that 2% of the variance of the self-efficacy rating scores of principals could be explained by the set of predictor variables. When adjusted for sample size and number of predictors, the explained variance showed no change and remained 2%. The standard error of the estimate showed that the average residual distance from the regression line was 1.02 units of self-efficacy scores from the regression (prediction) line. Table 18 shows the descriptive statistics and correlations among the variables. Table 19 shows the model summary for self-efficacy scores in social capital. The statistical finding was not significant, R^2 = .02, adjusted R^2 = .002, $F(4, 221) = 1.12$, p = .35 (Table 20).

Table 18

Descriptive Statistics and Correlations – Social Capital

Descriptor	SE Soc Cap	Min Aerobic	Min Strength	Int Aerobic	Int Strength
SE Soc Cap					
Min Aerobic	.073				
Min Strength	.063	.401			
Int Aerobic	.139	.556	.388		
Int Strength	.092	.363	.711	.525	
M	8.423	76.850	24.190	.850	.50
SD	1.020	87.320	44.310	.630	.61

Note. Min = minutes of aerobic exercise/strength training; Int = intensity of aerobics/strength training

Table 19

Model Summary: Statistics for Self-Efficacy Scores in Social Capital

Criterion Var	*R*	R^2	Adjusted R^2	SE Estimate
Self-Eff Score	.141	.020	.002	1.02

Table 20

Regression Coefficients for Self-Efficacy Scores in Social Capital

Variable	*B*	*SE*	*β*	*t*	Sig
Min Aerobic	.00	.00	-.01	-.10	.923
Min Strength	<.00	.00	-.01	-.06	.950
Int Aerobic	.18	.14	.13	1.46	.145
Int Strength	.05	.17	.03	.30	.761
(Constant)	8.23	.12		71.54	.000

Note. Min = minutes of aerobic exercise/strength training; Int = intensity of aerobics/strength training

Inferential Subquestion 1 failed to reject the null hypothesis. There was no relationship between minutes per week and/or intensity of aerobic exercise and/or strength training and principals' self-efficacy in targeted domains of job performance (instructional leadership, building management, and development of social capital).

Inferential Statistics for Exercise and Best Practices

A fourth multiple regression analysis was conducted to ascertain if minutes of aerobic exercise, minutes of strength training, intensity of aerobic exercise, and intensity of strength

training predict elements of best practices in the area of instructional leadership. Assumptions for this multiple regression were met. The assumption for multicollinearity was met as the tolerance levels for predictors included minutes of aerobic exercise, minutes of strength training, intensity of aerobic exercise, and intensity of strength training in this regression was above .2. The tolerance levels ranged from .42 to .65. Assumption of independent errors was met with a Durbin-Watson test score of 2.12. By observing the histogram of standardized residuals and the normal p-p plot of standardized residuals, it was determined that they were normally distributed. The residuals aligned with the diagonal line on the plot. The scatterplot of standardized residuals showed that assumptions of linearity and homogeneity of variance were met. The plot showed a random pattern.

The multiple correlation coefficient showed the correlation between the observed and predicted values of minutes of aerobic exercise, minutes of strength training, intensity of exercise, and intensity of strength training for elements of best practices in instructional leadership (R = .17) which represented a low correlation between the predictor variables with the best practices in instructional leadership. The multiple coefficient of determination (R^2) showed that 2.7% of the variance of the best practices scores of principals could be explained by the set of predictor variables. When adjusted for sample size and number of predictors, the explained variance showed no change and remained 2.7%. The standard error of the estimate showed that the average residual distance from the regression line was 1.65 units of best practice scores from the regression (prediction) line. Table 21 shows the descriptive statistics and correlations among the variables. Table 22 shows the model summary for elements of best practice scores in instructional leadership. The statistical finding was not significant, R^2 = .03, adjusted R^2 = .01, $F(4, 221) = 1.56$, p = .19 (Table 23).

Table 21

Descriptive Statistics and Correlations – Best Practices Instructional Leadership

Descriptor	BP InsLdr	Min Aerobic	Min Strength	Int Aerobic	Int Strength
BP InsLdr					
Min Aerobic	.104				
Min Strength	-.017	.401			
Int Aerobic	.060	.556	.388		
IntStrength	.073	.363	.711	.525	
M	8.044	76.850	24.190	.850	.50
SD	1.655	87.320	44.310	.630	.61

Note. Min = minutes of aerobic exercise/strength training; Int = intensity of aerobics/strength training; BP InsLdr = Best Practices Instructional Leadership

Table 22

Model Summary: Statistics for Elements of Best Practice in Instructional Leadership

Criterion Var	*R*	R^2	Adjusted R^2	SE Estimate
BP InsLdr	.165	.027	.010	1.647

Note. BP InsLdr = Best Practices Instructional Leadership

Table 23

Regression Coefficients for Elements of Best Practice Scores in Instructional Leadership

Variable	*B*	*SE*	*β*	*t*	Sig
Min Aerobic	.00	.00	.13	1.62	.108
Min Strength	-.01	.00	-.18	-1.83	.068
Int Aerobic	-.09	.23	-.03	-.39	.698
Int Strength	.46	.28	.17	1.65	.100
(Constant)	7.86	.19		42.19	.000

A fifth multiple regression analysis was conducted to ascertain if minutes of aerobic exercise, minutes of strength training, intensity of aerobic exercise, and intensity of strength training predict elements of best practices in the area of building management. Assumptions for this multiple regression were met. The assumption for multicollinearity was met as the tolerance levels for predictors including minutes of aerobic exercise, minutes of strength training, intensity of aerobic exercise, and intensity of strength training in this regression was above .2. The tolerance levels ranged from .42 to .65. Assumption of independent errors was met with a Durbin-Watson test score of 1.95. By observing the histogram of standardized residuals and the normal p-p plot of standardized residuals, it was determined that they were normally distributed. The residuals aligned with the diagonal line on the plot. The scatterplot of standardized residuals showed that assumptions of linearity and homogeneity of variance were met. The plot showed a random pattern.

The multiple correlation coefficient showed the correlation between the observed and predicted values of minutes of aerobic exercise, minutes of strength training, intensity of

exercise, and intensity of strength training for elements of best practices in building management (R = .11) which represented a low correlation between the predictor variables with the best practices in building management. The multiple coefficient of determination (R^2) showed that 1.3% of the variance of the best practices scores of principals could be explained by the set of predictor variables. When adjusted for sample size and number of predictors, the explained variance showed no change and remained 1.3%. The standard error of the estimate showed that the average residual distance from the regression line was 1.59 units of best practice scores from the regression (prediction) line. Table 24 below shows the descriptive statistics and correlations among the variables. Table 25 shows the model summary for elements of best practice scores in building management. The statistical finding was not significant, R^2 = .01, adjusted R^2 = -.01, $F(4, 221) = .70$, $p = .59$ (Table 26).

Table 24

Descriptive Statistics and Correlations – Best Practices Building Management

Descriptor	BP Bldg Mgt	Min Aerobic	Min Strength	Int Aerobic	Int Strength
BP Bldg Mgt					
Min Aerobic	.081				
Min Strength	.037	.401			
Int Aerobic	.105	.556	.388		
Int Strength	.068	.363	.711	.525	
M	8.148	76.850	24.190	.850	.50
SD	1.589	87.320	44.310	.630	.61

Note. BP Bldg Mgt = Best Practices Building Management

Table 25

Model Summary: Statistics for Elements of Best Practice in Building Management

Criterion Var	*R*	R^2	Adjusted R^2	SE Estimate
BP Bldg Mgt	.112	.013	-.005	1.593

Note. BP Bldg Mgt = Best Practices Building Management

Table 26

Regression Coefficients for Elements of Best Practice Scores in Building Management

Variable	*B*	*SE*	*β*	*t*	Sig
Min Aerobic	.00	.00	.04	.46	.644
Min Strength	<.00	.00	-.04	-.38	.704
Int Aerobic	.19	.23	.08	.86	.390
Int Strength	.11	.27	.04	.39	.696
(Constant)	7.91	.18		43.93	.000

A sixth multiple regression analysis was conducted to ascertain if minutes of aerobic exercise, minutes of strength training, intensity of aerobic exercise, and intensity of strength training predict elements of best practices in the area of social capital. Assumptions for this multiple regression were met. The assumption for multicollinearity was met as the tolerance levels for predictors including minutes of aerobic exercise, minutes of strength training, intensity of aerobic exercise, and intensity of strength training in this regression was above .2. The tolerance levels ranged from .42 to .65. Assumption of independent errors was met with a Durbin-Watson test score of 1.86. By observing the histogram of standardized residuals and the

normal p-p plot of standardized residuals, it was determined that they were normally distributed. The residuals aligned with the diagonal line on the plot. The scatterplot of standardized residuals showed that assumptions of linearity and homogeneity of variance were met. The plot showed a random pattern.

The multiple correlation coefficient showed the correlation between the observed and predicted values of minutes of aerobic exercise, minutes of strength training, intensity of exercise, and intensity of strength training for elements of best practices in social capital (R = .11) which represented a low correlation between the predictor variables with the best practices in instructional leadership. The multiple coefficient of determination (R^2) showed that 1.2% of the variance of the best practices scores of principals could be explained by the set of predictor variables. When adjusted for sample size and number of predictors, the explained variance showed no change and remained 1.2%. The standard error of the estimate showed that the average residual distance from the regression line was 1.48 units of best practice scores from the regression (prediction) line. Table 27 shows the descriptive statistics and correlations among the variables. Table 28 shows the model summary for elements of best practice scores in social capital. The statistical finding was not significant, R^2 = .11, adjusted R^2 = -.01, $F(4, 221) = .69$, p = .60 (Table 29).

Table 27

Descriptive Statistics and Correlations – Best Practices Social Capital

Descriptor	BP Soc Cap	Min Aerobic	Min Strength	Int Aerobic	Int Strength
BP Soc Cap					
Min Aerobic	.0640				
Min Strength	.0050	.401			
Int Aerobic	.0730	.556	.388		
Int Strength	.0690	.363	.711	.525	
M	8.2257	76.850	24.190	.850	.50
SD	1.4787	87.320	44.310	.630	.61

Note. BP Soc Cap = Best Practices Social Capital

Table 28

Model Summary: Statistics for Elements of Best Practice in Social Capital

Criterion Var	*R*	R^2	Adjusted R^2	SE Estimate
BPractice Sc	.111	.012	-.006	1.483

Note. BP Soc Cap = Best Practices Social Capital

Table 29

Regression Coefficients for Elements of Best Practice Scores in Social Capital

Variable	*B*	*SE*	*β*	*t*	Sig
Min Aerobic	.00	.00	.05	.61	.542
Min Strength	<.00	.00	-.10	-1.07	.287
Int Aerobic	.06	.21	.03	.30	.768
Int Strength	.27	.25	.11	1.08	.282
(Constant)	8.06	.17		48.06	.000

With multiple, inferential statistical analyses run on the data collected for this study, it is clear that Inferential Subquestion 2 failed to reject the null hypothesis. There was no relationship between minutes per week and/or intensity of aerobic exercise and/or strength training and principals' use of best practices in targeted domains of job performance (instructional leadership, building management, and development of social capital).

Summary

This chapter contained three descriptive research questions regarding a relationship between principals' exercise habits and elements of best practices and professional performance. Descriptive information was gleaned regarding levels of exercise displayed by principals in terms of aerobics and strength training. Respondents indicated an average of 77 minutes per week of aerobic exercise and 25 minutes a week of strength training. Regarding intensity, 28% said they did not participate in aerobic exercise, 59% said they participated moderately, and 13% said they participated vigorously. In strength training, 56% do not participate, although 38% engaged moderately in strength training, and 6% engaged vigorously in strength training.

Additional information was gathered by looking at principal exercise habits in terms of age, building level, and gender.

Descriptive data were generated in efficacy scores of principals. On a scale of 1 to 10, principals averaged scores of 8 or 9 in three areas of self-efficacy (instructional leadership, building management, and social capital). The average score of 9 appeared when principals participated vigorously in aerobic or strength training.

Descriptive data were found in elements of best practice of principals. On a scale of 1 to 10, principals averaged a score of 8 in all areas of best practices (instructional leadership, building management, and social capital) whether they participated in aerobic or strength training except in the area of building management where principals who reported participating in aerobic exercise vigorously averaged a score of 9.

This chapter also contained the findings of two inferential questions. Multiple regression analyses were used to analyze the following research questions: Do minutes per week and/or intensity of aerobic exercise and/or strength training predict a significant proportion of the variance in principals' self-efficacy in targeted domains of job performance (instructional leadership, building management, and development of social capital)? And, Do minutes per week and/or intensity of aerobic exercise and/or strength training predict a significant proportion of the variance in principals' use of best practices in targeted domains of job performance (instructional leadership, building management, and development of social capital)?

Multiple regression allowed me to look at all four independent variables (minutes of aerobic exercise, minutes of strength-training exercise, intensity of aerobic exercise, intensity of strength training) with respect to each of the six dependent variables (self-efficacy rating in instructional leadership, self-efficacy in building management, self-efficacy in social capital,

elements of best practices in instructional leadership, elements of best practices in building management, elements of best practices in social capital). Different combinations of these four variables with respect to the six dependent variables were also examined.

Inferential Subquestions 1 and 2 failed to reject the null following the multiple regression analyses. Minutes per week and/or intensity of aerobic exercise and/or strength training failed to predict a significant proportion of the variance in principals' self-efficacy ratings and elements of best practices.

CHAPTER 5

DISCUSSIONS OF FINDINGS, CONCLUSIONS AND IMPLICATIONS, AND FUTURE RESEARCH

Overview of the Chapter

This chapter is organized into three sections. The first section provides a discussion of findings including a summary of both descriptive and inferential testing along with conclusions. The second section shares implications of the findings. The third section discusses directions for future research associated with the role of exercise in K-12 principals' professional performance.

The purpose of this study was to explore whether regular physical fitness exercise has a relationship with successful school leadership. An analysis was prepared to determine what relationships exist between exercise habits and leadership effectiveness. The exercise habits examined were minutes per week and/or intensity of aerobic exercise, minutes per week and/or intensity of strength-training exercise, and any combination of minutes and/or intensity of aerobic exercise, strength training, or both.

The research design involved a population of 1,923 public school principals in Indiana. Principal responses were collected using a survey. Statistical analysis of the data included descriptive statistics regarding principals' exercise habits in terms of minutes per week and intensity, age, building level, and gender. Descriptive summaries were also made regarding

efficacy scores and elements of best practices for principals. Multiple regression analyses were used to analyze the following research questions:

1. Do minutes per week and/or intensity of aerobic exercise and/or strength training predict a significant proportion of the variance in principals' self-efficacy in targeted domains of job performance (instructional leadership, building management, and development of social capital)?
2. Do minutes per week and/or intensity of aerobic exercise and/or strength training predict a significant proportion of the variance in principals' use of best practices in targeted domains of job performance (instructional leadership, building management, and development of social capital)?

A total of 227 public school principals in Indiana responded to a 42-item survey instrument, which questioned frequency of exercise habits and leadership best practices (Appendix A). The researcher-developed survey allowed for collection of the descriptive data and personalized accounts of the minutes and intensity of the principals' exercise habits in aerobic and strength training exercises. The NEOS™ Efficacy Outcomes System was used for a portion of the survey measuring principals' self-efficacy in instructional leadership, building management, and social capital (Next Element Consulting, 2013).

Discussion of Findings

Descriptive Subquestion 1

What are the levels of exercise displayed by principals in terms of aerobics and strength training? Of the 1,923 Indiana public school principals surveyed, a total of 227 principals responded. Respondents indicated an average of 77 minutes ($M = 76.85$, $SD = 87.32$) of aerobic exercise per week. Minutes ranged from 0 to 400. In the area of strength training, respondents

indicated an average of 25 minutes (M = 25.19, SD = 46.68) per week. Minutes ranged from 0 to 300. Regarding intensity of their exercise, 64 (28.2%) principals indicated they did not participate in aerobic exercise, 133 (58.6%) principals participated moderately, and 30 (13.2%) principals participated vigorously. In the area of strength training, 126 (55.5%) principals indicated they did not engage, 87 (38.3%) principals engaged moderately, and 14 (6.2%) principals engaged vigorously.

When looking at the average minutes in aerobic and strength training exercise, one should recognize how far the individual responses vary or deviate from the mean, as evidenced by the large standard deviations. Although a small sample size or outliers could cause a large standard deviation, sometimes variables are naturally disparate (Sullivan, 2010). Principals exercise habits varied greatly in this study.

The levels of exercise displayed by principals were looked at in terms of age, building level, and gender. Table 30 shows the levels of exercise in each age group. The 30-39 age group showed the highest numbers in vigorous aerobic exercise (17.8%) and vigorous strength exercise (15.6%). Principals in the 40-49 age range displayed the greatest marks in not participating in strength training (59.8%). Principals between the ages of 50-59 exhibited the highest average of minutes in aerobic exercise (88.56). In the age range of 60 +, principals indicated the greatest marks in average of minutes in strength exercise (31.30) and not exercising in aerobics (34.8%).

Table 30

Aerobic and Strength Training for All Age Groups

Age	Aerobic Exercise			Strength Exercise		
30-39	None	Moderate	Vigorous	None	Moderate	Vigorous
	24.4%	57.8%	17.8%	44.4%	40.0%	15.6%
	Average of aerobic exercise: 81.00 minutes			Average of strength exercise: 27.27 minutes		
40-49	27.6%	60.9%	11.5%	59.8%	39.1%	1.1%
	Average of aerobic exercise: 72.00 minutes			Average of strength exercise: 21.90 minutes		
50-59	29.2%	56.9%	13.9%	58.3%	34.7%	6.9%
	Average of aerobic exercise: 89.00 minutes			Average of strength exercise: 29.50 minutes		
60 +	34.8%	56.5%	8.7%	52.2%	43.5%	4.3%
	Average of aerobic exercise: 51.00 minutes			Average of strength exercise: 31.3 minutes		

The elementary building level group showed the highest numbers in average minutes in strength training (28.17) and moderate aerobic exercise (60.7%). Principals in the middle school displayed the greatest marks in average minutes in aerobic exercise (77.31), not participating in aerobic exercise (30.6%), moderate strength training exercise (41.7%), and in vigorous aerobic exercise (16.7%). High school principals exhibited the highest percentage of not participating in strength training exercise (58.0%). However, these principals showed the greatest percentage in strength training vigorously (7.2%). Table 31 displays the levels of exercise in each building level.

Table 31

Aerobic and Strength Training for All Building Levels

Building Level	Aerobic Exercise			Strength Exercise		
Elem	None	Moderate	Vigorous	None	Moderate	Vigorous
	27.9%	60.7%	11.5%	54.9%	39.3%	5.7%
	Average of aerobic exercise: 77.20 minutes			Average of strength exercise: 28.17 minutes		
MS	30.6%	52.8%	16.7%	52.8%	41.7%	5.6%
	Average of aerobic exercise: 77.31 minutes			Average of strength exercise: 22.25 minutes		
HS	27.5%	58.0%	14.5%	58.0%	34.8%	7.2%
	Average of aerobic exercise: 76.00 minutes			Average of strength exercise: 21.45 minutes		

The male principals showed the highest numbers in average minutes of aerobic (81.01), average minutes of strength training (26.63), vigorous aerobic exercise (16.5%) and vigorous strength exercise (7.1%). Female principals displayed the greatest marks in not exercising in aerobic (34.3%) and not participating in strength training (56.6%). In the area of moderate exercise for aerobic and strength training, virtually no difference existed between the two genders. Two-tenths of a percentage separated the genders. Table 32 shows the levels of exercise in both genders.

Table 32

Aerobic and Strength Training for Both Genders

Gender	Aerobic Exercise			Strength Exercise		
Men	None	Moderate	Vigorous	None	Moderate	Vigorous
	23.6%	59.8%	16.5%	54.3%	38.6%	7.1%
	Average of aerobic exercise: 81.01 minutes			Average of strength exercise: 26.63 minutes		
Women	34.3%	59.6%	9.1%	56.6%	38.4%	5.1%
	Average of aerobic exercise: 70.82 minutes			Average of strength exercise: 23.60 minutes		

Note. (n = 127)

There are interesting results regarding which groups were not participating in exercises. Nearly 30% of all principals do not participate in aerobic exercise, and over half do not participate in strength training. Female principals lead their male counterparts in non-participation in both types of exercise. Finding time to participate in aerobic and/or strength training may be an issue for female school principals. Although more women hold leadership positions these days, the traditional stereotype, and the resultant reality of expectations, regarding male-female roles at home has not changed. A Harvard business study revealed that executives of both sexes consider the tension between work and family to be primarily a women's problem (Groysberg & Abrahams, 2014).

This research also pointed out those women in the study indicated that the most difficult aspect of managing work and family was contending with the cultural expectations of mothering. Male leaders admitted to spending insufficient time with their families but considered this

satisfactory in order to provide financially for their families. Women leaders may not be taking care of their own human capital due to the demands of work and home.

Descriptive Subquestion 2

What are the levels of self-efficacy reported by practicing principals in targeted areas of job performance (instructional leadership, building management, and development of social capital) at varying exercise levels and regimens? In terms of self-efficacy ratings in the area of instructional leadership, those who did not participate in aerobic exercise had an average score of eight (M = 8.38, SD = .92), those who participated moderately had an average score of eight (M = 8.39, SD = .89), and those who participated vigorously had a score of nine (M = 8.63, SD = .85). In regard to intensity in strength training, those who did not engage had an average score of eight (M = 8.40, SD = .94), those who engaged moderately had an average score of eight (M = 8.41, SD = .85), and those who engaged vigorously had an average score of nine (M = 8.67, SD = .80).

In terms of self-efficacy ratings in the area of building management, those who did not participate in aerobic exercise had an average score of eight8 (M = 8.39, SD = 1.06), those who participated moderately had an average score of nine (M = 8.51, SD = .91), and those who participated vigorously had an average score of nine (M = 8.76, SD = .74). In regard to intensity in strength training, those who did not engage had an average score of eight (M = 8.49, SD = .99), those who engaged moderately had an average score of nine (M = 8.52, SD = .89), and those who engaged vigorously had an average score of nine (M = 8.62, SD = .76).

In terms of self-efficacy ratings in the area of social capital, those who did not participate in aerobic exercise had an average score of eight (M = 8.25, SD = 1.16), those who participated moderately had an average score of eight (M = 8.44, SD = .91), and those who participated

vigorously had an average score of nine (M = 8.73, SD = 1.09). In regard to intensity in strength training, those who did not engage had an average score of eight (M = 8.35, SD = 1.07), those who engaged moderately had an average score of eight (M = 8.49, SD = .94), and those who engaged vigorously had an average score of nine (M = 8.65, SD = .93).

Although not necessarily statistically significant, what these findings illustrate in their entirety is that those principals who participated vigorously in aerobic and/or strength training have higher ratings in self-efficacy. This may point toward a trend of harder workouts leading to having a stronger sense of achievement and accomplishment. Perhaps these leaders experience a greater sense of well being, pride, and self-confidence.

Rognmo, Hetland, Helgerud, Hoff, and Slordahl (2004) believed high intensity interval exercise was superior to moderate intensity exercise for increasing aerobic capacity in people. Maintaining a vigorous exercise program requires a person to be tenacious and tough. Toughness does not mean that that people need to abuse their bodies, but rather that they continue a steady exercise program (Goldsby, Neck, & Koerber, 2001). If principals think of toughness in this fashion, they have a much better chance of being long-time participants in the sport. Staying committed to an exercise program is important for today's leaders. It is difficult to hold on to worry, fear, anger, and resentment during intense physical activity (Bejes, 2005). The feelings may return afterwards, but if they do, they will be less intense. New ideas often come during or after working up a good sweat. Dedicating and immersing oneself in an exercise program will also transform a person's self-image (Goldsby et al., 2001). Those principals who exercise hard are mentally prepared for the challenges that arise. A 2005 study suggested that physical activity has been considered to be an important component of self-evaluations (McAuley et al., 2005).

Descriptive Subquestion 3

What are the levels of best practices displayed by principals in targeted areas of job performance (instructional leadership, building management, and development of social capital) at varying exercise levels and regimens? In terms of elements of best practices in the area of instructional leadership, those who did not participate in aerobic exercise had an average score of eight (M = 7.87, SD = 1.68), those who participated moderately had an average score of eight (M = 8.11, SD = 1.63), and those who participated vigorously had an average score of eight (M = 8.13, SD = 1.70). In regard to intensity in strength training, those who did not engage had an average score of eight (M = 7.89, SD = 1.65), those who engaged moderately had an average score of eight (M = 8.30, SD = 1.62), and those who engaged vigorously had an average score of eight (M = 7.79, SD = 1.81).

In terms of elements of best practices in the area of building management, those who did not participate in aerobic exercise had an average score of eight (M = 7.96, SD = 1.59), those who participated moderately had an average score of eight (M = 8.15, SD = 1.66), and those who participated vigorously had an average score of nine (M = 8.53, SD = 1.16). In regard to intensity in strength training, those who did not engage had an average score of eight (M = 8.05, SD = 1.60), those who engaged moderately had an average score of eight (M = 8.26, SD = 1.63), and those who engaged vigorously had an average score of eight (M = 8.32, SD = 1.17).

In terms of elements of best practices in the area of social capital, those who did not participate in aerobic exercise had an average score of eight (M = 8.00, SD = 1.58), those who participated moderately had an average score of eight (M = 8.33, SD = 1.40), and those who participated vigorously had an average score of eight (M = 8.25, SD = 1.58). In regard to intensity in strength training, those who did not engage had an average score of eight (M = 8.10,

SD = 1.55), those who engaged moderately had an average score of eight (*M* = 8.42, *SD* = 1.36), and those who engaged vigorously had an average score of eight (*M* = 8.11, *SD* = 1.40).

What these findings show that is particularly interesting is that, unlike the scores of best practices in aerobic exercise, the strength exercise showed no real difference between the intensity of the workouts. Is aerobic exercise more of a factor than strength exercise in performance? The descriptive data clearly showed that more principals engage in aerobic exercise than strength training. Traditionally, health guidelines predominantly focus on aerobic exercise, which mostly improves cardiovascular fitness. The valuable results of strength training have been known for years in physiatrics and rehabilitation. However, recent studies reveal key positive outcomes far beyond this (Sundell, 2011). From observations and research, combination exercise gives the greatest benefits as opposed to an exclusive aerobic or strength training modality. The combination of aerobic and strength exercise seemed to produce the greatest benefits (Ho, Dhaliwal, Hills, & Pal, 2012).

Inferential Subquestion 1

Do minutes per week and/or intensity of aerobic exercise and/or strength training predict a significant proportion of the variance in principals' self-efficacy in targeted domains of job performance (instructional leadership, building management, and development of social capital)?

It was clear that there was no statistically significant relationship between minutes per week and/or intensity of aerobic exercise and/or strength training and principals' self-efficacy in targeted domains of job performance (instructional leadership, building management, and development of social capital). The statistical finding for self-efficacy scores in instructional leadership was not significant, $R^2 = .01$, adjusted $R^2 = -.01$, $F(4, 221) = .52$, $p = .72$. The statistical finding for self-efficacy scores in building management was not significant, $R^2 = .02$,

adjusted R^2 = <.01, $F(4, 221) = .93$, $p = .45$. The statistical finding for self-efficacy scores in social capital was not significant, $R^2 = .02$, adjusted $R^2 = -.002$, $F(4, 221) = .1.12$, $p = .35$.

Self-efficacy ratings from principals in this study hovered around the mean of 8 with very little variance. Are school principals that confident of their abilities? Do leaders possess personality traits that lend themselves to higher self-confidence and esteem? One of the most reported findings in leadership literature is the relationship between a leader's self-confidence and successful leadership (McCormick et al., 2002). Leaders who have a strong sense of efficacy exert greater effort to master the challenges (Bandura & Schunk, 1981).

Could it be surmised that school leaders have the advantage of collective efficacy to support and promote their self-efficacy? The strength of the group – in this case, the school – lies partly in the principals' sense of collective efficacy in that they believe they can solve their problems and improve the environments through concerted effort. Perhaps principals feel the support of their teachers. Maybe principals have confidence in the abilities of their teachers and support staff enough to rely on them to do the work they need to do to help students achieve. Another thought is that when individuals observe others who are similar to themselves performing a task successfully, this experience helps bolster the observer's own self-efficacy (Bandura, 1977). It could be that a neighboring school with similar demographics that receives an A-rating or 4-star rating helps foster a spirit of an "If they can do it, I can do it" mentality; thus, leading to greater self-efficacy.

Inferential Subquestion 2

Do minutes per week and/or intensity of aerobic exercise and/or strength training predict a significant proportion of the variance in principals' use of best practices in targeted domains of job performance (instructional leadership, building management, and development of social

capital)? It was clear that there was no statistically significant relationship between minutes per week and/or intensity of aerobic exercise and/or strength training and principals' use of best practices in targeted domains of job performance (instructional leadership, building management, and development of social capital). The statistical finding for elements of best practice scores in instructional leadership was not significant, $R^2 = .03$, adjusted $R^2 = .01$, $F(4, 221) = 1.56$, $p = .19$. The statistical finding for elements of best practice scores in building management was not significant, $R^2 = .01$, adjusted $R^2 = -.01$, $F(4, 221) = .70$, $p = .59$. The statistical finding for elements of best practice scores in social capital was not significant, $R^2 = .11$, adjusted $R^2 = -.01$, $F(4, 221) = .69$, $p = .60$.

Just like the numbers in the self-efficacy ratings, the mean of the frequency of elements of best practices lingered around the number 8 with very little variance. Because the questionnaire survey was a self-report instrument, results lacked the perspective from other important people surrounding the public school principal. Teachers, students, and superintendents could have offered very different perspectives in elements of best practices. These educational stakeholders are likely to have fairly solid sentiments regarding how leaders behave and perform. Obtaining information from multiple sources would allow some sort of cross validation for the self-report from the principal. It may be possible to collect some of the data using different stakeholders or by different survey questions or by using a combination of these. This would allow for a much broader perspective.

Conclusions and Implications

The state of education is constantly changing, and so is the role of building principal. The enormity of the principal's workload and the work are too great to expect less-than-healthy people in those positions. The conclusions and implications of this study might include a

heightened awareness of the need for healthy and fit school leaders; they might also articulate for leadership development programs to include fitness components and to promote a healthier learning environment for all. Principals must recognize that their leadership effectiveness impacts the success of their schools.

This study sought statistical support through its findings on the importance of regular exercise. In particular, it did so through asking whether a principal's exercise habits could predict performance, self-efficacy, and frequency in elements of best practice. Although the data from this research did not meet the criteria of "statistical significance" in terms of any relationship between exercise habits with ratings of self-efficacy and elements of best practice, points can be gleaned from the statistics. They are as follows: The percentage of principals who did not engage in aerobic exercise was 28% and in strength training was 56%. No one doubts the importance and value of fitness, and thankfully society seems to embrace this concept; however, not all actually practice it. Exercise is a word that strikes fear in many people. Some will not exercise. Some cannot exercise. Some find any excuse possible not to exercise. Why is it so hard? Why is it that more people do not exercise? In this research survey, an open-ended question was included for those who do not exercise to indicate why they did not. Seventy-one principals indicated lack of time as the reason.

This is particularly important in light of the findings of the study that include the fact that many school leaders do not engage in physical exercise and time is the biggest factor. This clearly indicates that officials in charge of future leadership development programs should gain awareness that despite the physical, psychological, and emotional benefits of exercise; principals are not engaging due to time constraints of their demanding positions. Leaders need to engage in physical fitness activities that are time efficient. School principals may have resources, facilities,

and equipment of which they are not taking advantage. Surprisingly, high school principals who have access to weight rooms have the highest percentage of not participating in strength training. Many of today's high schools are furnished with more than adequate physical fitness and weight room facilities. Can leadership development programs encourage and support the idea of exercising during the workday? Can leadership development programs provide regimen ideas and fitness programs that can be done alone? Research showed that the majority of regular exercisers report that they exercise alone (McDowell-Larsen, 2003). Leadership development programs need to emphasize the importance of committing to regular exercise and ensuring that it is carried out. For a busy school principal, an exercise program can lead to a less-stressful and more-productive life.

Principals

The benefits of fitness, including greater life expectancy, lowered risk of illness, disease, superior energy and strength, and so many others are irrefutable (CDC, 2014). For a leader, it is even more important. Those leadership positions who are completely out of shape not only hurts themselves, but also do a disservice to those they lead. Leaders are supposed to set good examples for their subordinates. Fitness does more than keep off the extra weight. It increases mental stamina and endurance as well (Barton & Petty, 2010). It helps one weather stressful events and to keep a steady mind under pressure. Consider the growing literature that has noted that exercise can play an important role in reducing stress levels in executives (Goldsby et al., 2001). Current school culture and the scrutiny of external stakeholders and policymakers subject principals to increasing levels of stress. Warning signs of a person's not handling stress effectively include difficulties in falling asleep, loss of appetite, excessive appetite, and irritability (Elliott & Eisdorfer, 1982). More serious signs of stress are high blood pressure,

migraine headaches, and depression. If principals have a better understanding of how stress occurs, it may encourage them to allot time for exercise. Leader of schools should take advantage of the extra mental acuity and sharpness that comes with being physically fit.

Good leaders know how to push themselves, personally and professionally. To grow and make thrive an organization requires the same physical and mental stamina as a demanding workout (Neck & Cooper, 2000). Research has indicated that leaders who are fit are more apt to handle massive demands that they encounter, including endless meetings, taxing traveling schedules, high pressure, and stress (Neck et al., 2004).

Today's school principal is responsible for many people, their safety, their achievement, their well being, and the success of the school. This builds a stressful, physical demand. As mentioned earlier, McDowell-Larsen's (2003) CCL group believed that fitness and health positively impacts a leader's performance. They specified that leaders who regularly exercise outperform unfit leaders due to improved abilities to deal with the demanding work and schedules common to executive life. Leaders that know what that feels like will have an edge over those who do not.

This study suggested that there was no statistical significance in terms of any relationship between exercise habits with ratings of self-efficacy and elements of best practice. However, findings in other research pointed out all the benefits of exercise and physical exercise. Perhaps this research focused too much on the outcomes of efficacy and frequencies of best practices and ignored the antecedents that may have led to those outcomes. Certainly, subjective evidence, where principals give indication that consistent exercise impacts positively to their professional performance, reinforces the argument that fitness is a chief fundamental factor. However, supporting testimony from leaders who do not exercise attesting that not participating in physical

fitness activity compromises their abilities to perform has not been found (McDowell-Larsen et al., 2002). It may be beneficial to focus on the stories of successful principals who exercise. Finding a measure-based approach for studying and developing effective school leadership is of great magnitude.

Leadership Development Programs

For some principals, fitness has always been a part of their lives. They may have been involved in sports and athletics in school, or they may have always prioritized health and wellness in order to stay in shape or healthy. It is these principals who believe a good leader must maintain mental and physical wellness in order to effectively drive their schools forward and inspire their students and staffs. Principals who have not embedded physical fitness into their regular ways of life need a reason, a plan, and motivation to incorporate exercise in their lives. Due to busy schedules and the difficulty of keeping an interest in the activity, many principals quit these programs soon after they start. Leadership development programs need to support and encourage physical fitness in their platforms. Leaders need to be mentally prepared for the difficult realities of maintaining a regular workout program. Leadership training programs can assist in this preparation.

A study by the Center for Creative Leadership found that the leaders who exercised rated significantly higher on specific traits including the following: inspiring commitment, credibility, leading others, leading by example, energy, resilience, and calmness (McDowell-Larsen et al., 2002). The key is to stay away and/or combat stress to sustain these traits. The body reacts to both acute and chronic stress. However, when there is no end to the stress, the body starts to break down (Bejes, 2005). If principals can find a healthy way to process their chronic stress, they will protect themselves from many potential problems.

External policy reforms are driving leadership development programs to focus on skills and practices. Educational leadership development programs need to incorporate a set of habits or behaviors in their offerings. What do effective school leaders do? The answer to this question should become the focus of educational leadership development programs. Although this study did not find statistical significance in terms of any relationship between exercise habits with ratings of self-efficacy and elements of best practice, the descriptive and factual data should serve to well-inform one's practical point of view regarding the benefits and necessities of principal exercise habits and to help provide useful information for the layout of instructional leadership development programs.

Future Research

Based on the results of this study, the following recommendations for future research are made:

1. Ideally, researchers should obtain multiple measures of the variables from multiple sources, using multiple methods. Sources should include principals, teachers, and superintendents, in order to expand on what this could potentially provide in terms of significance to our field and profession.
2. Conceivably this study focused on too limited a range of easily reported behaviors. Perhaps an option for future study would be to expand upon the design of the questionnaire to include a wider variety of skills, habits, and behaviors. Maybe behaviors such as confidence, credibility, creativity, facing challenges, mental toughness, influence, energy, resilience, focus, discipline, and calmness could be examined.

3. In future studies, in addition to looking at principals' exercise habits, look at other activities and behaviors the principal engages in that are self-benefitting.
4. For future studies, take the minutes exercised in aerobic and strength and compare to the general American adult population. Knowing how school principals compare to the average American could offer valuable insight for leadership development programs.
5. A case study or qualitative research design should be conducted on effective leaders and their exercise habits. There may be value in studying the whole instead of the variables.

Primary Investigator's Final Thoughts

I still believe there is some sort of relationship between school leaders' performance and their exercise habits. It might be that exercise does benefit leadership; however, both effective and ineffective people do it. Finding a measurement of what constitutes an effective leader would help in ensuring only a study of effective principals. How can we frame the survey or study to ask the right questions? As I reflect on the research, I have several things that I would have done differently. Of course, hindsight is always 20/20, and using such, I took some time to elaborate on moving forward from this research project. Five major themes continue to run through my mind as I reflect on what could have been done differently.

The first idea is to have a broader perspective in rating the principal. Self-reporting has its limitations. Getting feedback from teachers, superintendents, and even students would allow for a larger perspective of viewpoints on the school principals abilities and skills.

Although the construct of self-efficacy is significant, relevant, and worthy of inclusion in leadership development and assessment, I am not sure I asked the correct questions. This is my

second “hindsight,” as I reflect on what could have been done differently. The NEOS™ survey measures three subcategories of self-efficacy: Openness, Resourcefulness, and Persistence. The area of persistence (courage, perseverance, dependability, and accountability) may be the field upon which to concentrate, as it lends itself more to traits and concepts closely associated with exercise. Instead of 27-survey questions regarding all three areas of the NEOS™ survey, perhaps honing in on the questions relating to persistence would allow for a closer link with exercise.

Throughout my research, my mind often shifted to the leaders I have known who were successful and considered effective yet did NOT exercise. This brought up the third idea for future studies. Surveys and/or qualitative studies should focus on all activities, behaviors, and actions in which principals engage that would be considered of self-benefit. These activities might include reading, meditating, outdoor leisure activities, sewing, photography, or anything else that allows for a regular occurrence of time for oneself.

Although looking at the percentage of principals who did not participate in aerobic and/or strength training exercise, it would have been interesting and advantageous to know how this compared to the average American. This led me to my fourth idea for future studies. The CDC and the President’s Council on Fitness, Sports, and Nutrition offer statistics on American adults who do and do not meet the guidelines in each area (aerobic and strength) (CDC, 2014). Because this survey and statistics did not allow for a section regarding principals who met exercise guidelines, I could not compare school leaders with the general American adult population. This information would be advantageous for leadership development programs in prioritizing the fitness component in their models. Using the minute’s principals indicated they exercised per week and converting that with the CDC parameters could have easily done this.

Finally, I believe that the school leaders who are successful and effective have stories, behaviors, skills, and actions, which can only be reported after thorough investigation and observation. A qualitative study following three-to-five effective school leaders would allow for an in-depth look at what is really happening in the area of physical fitness that may lead to effective school leadership. I believe there is value to quantitative and qualitative statistics and information; therefore, a mixed methods approach may be best for future studies. Offering more than a simple glimmer of hope to my hypotheses regarding the benefits of exercise for principals was the fact that no inverse correlations were found in this study; therefore, no statistics disproved that exercise does not have a positive impact upon a principal's professional performance. Finding the right questions and the accurate methods might be key to finding statistical significance in the future.

Summary

This study was created to seek a relationship between a public school principal's exercise habits and their professional performance. This study did not find inferential, statistical significance in any of the variables or combination of variables in relation to professional performance. Although it may appear that no difference exists in principals' effectiveness whether they engaged in exercise or not, deeper conclusions drawn from the descriptive data and relevant literature could support otherwise. Since the turn of the new millennium, researchers have looked for impacts exercise has on leaders and their leadership. These researchers have contended that there are ties between fitness and leadership (McDowell-Larsen et al., 2002, 2003; McGowen, 2003; Neck et al., 2004). With this taken into consideration on behalf of K-12 education and those relying upon our best leadership to guide them into the next century,

leadership development programs might consider implementing components to their platforms that include habits of exercise and fitness.

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APPENDIX A: SURVEY

1. Gender: Male Female

2. Level: Elementary Middle/Jr. High High School

3. Age: 20-29

   30-39

   40-49

   50-59

   60+

4. How many minutes per week do you engage in aerobic exercise? (Aerobic activity gets you breathing harder and your heart beating faster.) If you do not engage in aerobic exercise, please move to question 6.

5. **Moderate** intensity aerobic activity means you are working hard enough to raise your heart rate and break a sweat. One way to tell is that you will be able to talk, but not sing the words to your favorite song.

Vigorous intensity aerobic activity means you are breathing hard and fast, and your heart rate has gone up quite a bit. If you are working at this level, you won't be able to say more than a few words without pausing for a breath.

What is the intensity of your aerobic activity? Moderate Vigorous

6. How many minutes per week do you engage in strength training exercise? These activities should work all the major muscle groups of your body (legs, hip, back, chest, abdomen, shoulders, and arms). If you do not engage in strength training exercise, please move to Question 8.

7. **Moderate** strength training means working to the point where it is hard for you to do another repetition without help. A repetition is one complete movement of an activity, like lifting a weight or doing a sit up. 8-12 repetitions per activity count as one (1) set.

   Vigorous strength training means working to the point where it is nearly impossible to do another repetition without help. A repetition is one complete movement of an activity, like lifting a weight or doing a sit up. 8-12 repetitions per activity count as one (1) set.

What is the intensity of your strength training exercise? Moderate Vigorous

Questions 8-34

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The statements below describe different ways to deal with a principal's responsibilities. For each statement, please rate how confident you are in your ability to do what is described in the statement. For each situation listed, rate your degree of confidence.

In the area of **Instructional Leadership**:

8. I have confidence in my ability to stay motivated when things seem impossible.

0 1 2 3 4 5 6 7 8 9 10

No Way I can — Maybe I can — Definitely I can

9. I have confidence in my ability to trust in the goodness of others.

0 1 2 3 4 5 6 7 8 9 10

No Way I can — Maybe I can — Definitely I can

10. I have confidence in my ability to bounce back quickly when I am stressed out.

0 1 2 3 4 5 6 7 8 9 10

No Way I can — Maybe I can — Definitely I can

11. I have confidence in my ability to accept my failures as a necessary part of problem solving.

0 1 2 3 4 5 6 7 8 9 10

No Way I can — Maybe I can — Definitely I can

12. I have confidence in my ability to stay focused on my goals when things keep getting in my way.

0 1 2 3 4 5 6 7 8 9 10

No Way I can — Maybe I can — Definitely I can

13. I have confidence in my ability to ask others for help when I need it.

0 1 2 3 4 5 6 7 8 9 10

No Way I can — Maybe I can — Definitely I can

14. I have confidence in my ability to find more than one way to solve a problem.

0 1 2 3 4 5 6 7 8 9 10

No Way I can — Maybe I can — Definitely I can

15. I have confidence in my ability to understand both my strengths and weaknesses.

0 1 2 3 4 5 6 7 8 9 10

No Way I can — Maybe I can — Definitely I can

16. I have confidence in my ability to finish what I started even if I don't want to.

0 1 2 3 4 5 6 7 8 9 10

No Way I can — Maybe I can — Definitely I can

In the area of **Building Management**:

17. I have confidence in my ability to stay motivated when things seem impossible.

0	1	2	3	4	5	6	7	8	9	10
No Way I can					Maybe I can					Definitely I can

18. I have confidence in my ability to trust in the goodness of others.

0	1	2	3	4	5	6	7	8	9	10
No Way I can					Maybe I can					Definitely I can

19. I have confidence in my ability to bounce back quickly when I am stressed out.

0	1	2	3	4	5	6	7	8	9	10
No Way I can					Maybe I can					Definitely I can

20. I have confidence in my ability to accept my failures as a necessary part of problem solving.

0	1	2	3	4	5	6	7	8	9	10
No Way I can					Maybe I can					Definitely I can

21. I have confidence in my ability to stay focused on my goals when things keep getting in my way.

0	1	2	3	4	5	6	7	8	9	10
No Way I can					Maybe I can					Definitely I can

22. I have confidence in my ability to ask others for help when I need it.

0 1 2 3 4 5 6 7 8 9 10

No Way I can — Maybe I can — Definitely I can

23. I have confidence in my ability to find more than one way to solve a problem.

0 1 2 3 4 5 6 7 8 9 10

No Way I can — Maybe I can — Definitely I can

24. I have confidence in my ability to understand both my strengths and weaknesses.

0 1 2 3 4 5 6 7 8 9 10

No Way I can — Maybe I can — Definitely I can

25. I have confidence in my ability to finish what I started even if I don't want to.

0 1 2 3 4 5 6 7 8 9 10

No Way I can — Maybe I can — Definitely I can

In the area of **Fostering Interpersonal Relationships**:

26. I have confidence in my ability to stay motivated when things seem impossible.

0 1 2 3 4 5 6 7 8 9 10

No Way I can — Maybe I can — Definitely I can

27. I have confidence in my ability to trust in the goodness of others.

0 1 2 3 4 5 6 7 8 9 10

No Way I can — Maybe I can — Definitely I can

28. I have confidence in my ability to bounce back quickly when I am stressed out.

0 1 2 3 4 5 6 7 8 9 10

No Way I can — Maybe I can — Definitely I can

29. I have confidence in my ability to accept my failures as a necessary part of problem solving.

0 1 2 3 4 5 6 7 8 9 10

No Way I can — Maybe I can — Definitely I can

30. I have confidence in my ability to stay focused on my goals when things keep getting in my way.

0 1 2 3 4 5 6 7 8 9 10

No Way I can — Maybe I can — Definitely I can

31. I have confidence in my ability to ask others for help when I need it.

0 1 2 3 4 5 6 7 8 9 10

No Way I can — Maybe I can — Definitely I can

32. I have confidence in my ability to find more than one way to solve a problem.

0 1 2 3 4 5 6 7 8 9 10

No Way I can — Maybe I can — Definitely I can

33. I have confidence in my ability to understand both my strengths and weaknesses.

0	1	2	3	4	5	6	7	8	9	10
No Way I can					Maybe I can					Definitely I can

34. I have confidence in my ability to finish what I started even if I don't want to.

0	1	2	3	4	5	6	7	8	9	10
No Way I can					Maybe I can					Definitely I can

Questions 35-40

The statements below describe principals' responsibilities. For each statement, please rate how frequently you do what is described in the statement. For each statement listed, rate your frequency using the scale.

35. I use/analyze data to support student achievement.

0	1	2	3	4	5	6	7	8	9	10
Never	One-to-Two Times a Year		Monthly		Weekly	Several Times per Week		Daily		Continuously

36. I plan, create, and implement opportunities for teachers to improve their instructional practices.

0	1	2	3	4	5	6	7	8	9	10
Never	One-to-Two Times a Year		Monthly		Weekly	Several Times per Week		Daily		Continuously

37. I develop policies and procedures to establish a safe and orderly environment with a clear discipline code.

0	1 2	3 4	5	6 7	8 9	10
Never	One-to-Two Times a Year	Monthly	Weekly	Several Times per Week	Daily	Continuously

38. I make conscious efforts to recognize professional accomplishments among faculty in order to promote overall positive morale.

0	1 2	3 4	5	6 7	8 9	10
Never	One-to-Two Times a Year	Monthly	Weekly	Several Times per Week	Daily	Continuously

39. I communicate with my staff in order to build and establish and maintain relationships.

0	1 2	3 4	5	6 7	8 9	10
Never	One-to-Two Times a Year	Monthly	Weekly	Several Times per Week	Daily	Continuously

40. I communicate with community members in order to establish and maintain relationships with external providers of resources.

0	1 2	3 4	5	6 7	8 9	10
Never	One-to-Two Times a Year	Monthly	Weekly	Several Times per Week	Daily	Continuously

41. If you exercise, why do you?

42. If you do not exercise, why not?