President’s Message

Greetings IAHPERD Members!

I hope this message finds you doing well as your school year begins to wind down. Many incredible things have happened in the organization in the last few months, and I’m very excited about the future of IAHPERD.

In the next few months, you will see some changes to current programs and new initiatives in the organization. We have earmarked special funds strictly for Professional Development and travel for our members. Please be on the lookout for this information and take advantage of these great opportunities!

I hope you have all received information and have plans to attend the 2016 IAHPERD Convention. This year’s event will be June 21 & 22 at Simpson College in Indianola. I’m very excited to bring the convention to the beautifully renovated facilities at my alma mater, and I think it will be the perfect setting! The lineup of presenters is among the best ever assembled in Iowa, if not anywhere! We have many people coming from out of state to partake in some of the best Professional Development in Iowa. Please do not miss this chance to learn and network with the best!

As we move forward, there will be many opportunities to get involved with the leadership of IAHPERD. We have a couple of open committee chair positions, committee seats, and we are looking for a new President-Elect and Members At-Large. If you or one of your colleagues are interested in joining us, please do not hesitate to let me know!

‘President’s Message’ Continues on page 2
I hope to see you all in Indianola in June. Please continue to connect with us at www.iowaahperd.org, FaceBook: Iowa Ahperd and via Twitter: @iowaahperd.

My Best,

Ben

Ben Robison
2016 IAHPERD President
benrobison@ccaschools.org

 Presidents!
From left to Right: Ben Robison, current IAHPERD President; Jennifer Peterson, Past IAHPERD President & Tim Lane, 2014 IAHPERD President
OTTUMWA — With more than 10 schools in the Ottumwa Community School District, there are a lot of stories within each building.

Some of the most interesting stories come from teachers who have been with the schools the longest. These veteran teachers have seen numerous changes to the district throughout the years. These are their stories.

Mary Orman has always known that she wanted to be a teacher. Forty-one years later and she still knows that education was her calling in life. Orman had a younger brother who struggled with walking on his own. She spent many hours during her summer vacation helping him build up his strength. It was her teaching moments with him that inspired Orman to pursue physical education.

She interviewed for an open position a few months before she graduated from college and was offered the position a few days later. Orman explained that she always had a go-getting attitude when it comes to new experiences.

“I walk through the door when the opportunity arises.”

She works to make each lesson or program engaging for each student, especially for students who are not athletic or have a harder time finding an activity they enjoy.

“The class used to be a one-size-fits-all mentality, but now there are so many opportunities to branch out.”

Article continued on Page 4
This is one of the reasons that P.E. department started a walking class, which has been a huge success. Orman told a story about one student who joined the class and gradually progressed to take up running.

“I want to expose the student to something new every year, even if that means that I myself have to go and get a certification.”

Orman has a stream of students that visit her office throughout the day to say hi or borrow equipment. She is the go-to person for many students even if she is just someone they vent to. Orman explained that exercise and mental health go together, and she feels that it is very important to explain to her students.

This also plays into Orman’s outlook for new teachers that are coming into the building. She feels they need to have a positive outlook on their job because that will resonate with the students.

Orman finished off by saying that “It [teaching] takes time, but you get better with experience.”

To contact reporter Neal Query email her at nquerio@ottumwacourier.com or follow her on Twitter @CourierNeal
Online registration is available!
Visit: http://www.iowaahperd.org
Click on ‘Membership Registration’ & follow to become a member or renew a membership.

If not registering online, please print page and mail w/ a check payable to IAHPERD to:
Jennifer Schnell 424 E Terrace Dr. Center Point, IA 52213

Name______________________________________________________________
Address____________________________________________________________
City________________________________________________ Zip ____________
Email___________________________________ Phone_____________________
School/Organization__________________________________________________

I. Convention attendance options: circle one
- Full Professional convention registration and awards banquet $125
  (includes all meals)
- One day only – Tuesday Professional registration $80
  (includes lunch and awards banquet)
- One day only – Wednesday Professional registration (includes lunch) $80
- Full Student convention registration and awards banquet $50
  (includes all meals)
- One day only – Tuesday Student registration (includes lunch/banquet) $30
- One day only – Wednesday Student registration (includes lunch) $30

II. Membership options: (Membership is required of attendees)
- Professional annual membership $35
- Steve France Endowed membership $0
  (first time members: student and/or professional membership)
- Three year membership $84
- Retired membership $0
- Jump Rope or Hoops for Heart Coordinator $20
  (Raised over $1,000 in your 2015-16 event)

Amount Due [convention options(I) plus membership fees(II)] $__________________
2016 IAHPERD Convention - Lodging Information

Quality Inn Indianola

PHONE: (515-961-0058)

King bed $74.99

2 Queens $79.99

Use “IAHPERD discount”

(cut off date: May 20)

Options for overnight lodging at Simpson College Dorms

*** There are only 40 dorm rooms available for convention!!
*** Please register sooner than later!!

2 nights - single occupancy $50
1 night - single occupancy $25

2 nights - double occupancy $40 per person
1 nights - double occupancy $20 per person

Linen packages are approx. $12.00 per person and include bedding, pillow, deluxe towel, washcloth, soap & glass

Please visit: http://www.iowaahperd.org/2016-convention.html for our limited dorm room reservations
2016 IAHPERD Convention Highlights

A Strong Past and a Bright Future

2016 IAHPERD CONVENTION
Simpson College | Indianola | June 21 & 22

Featuring Special Presentations from:

AMANDA STANEC  JIM DeLINE  JO BAILEY  BEN PIRILLO

@MoveLiveLearn  @jimsgymtx  @LovePhyEd  @CoachPirillo

Also Featuring: Mike Doyle, Sarah Gietschier-Hartman, Kari Bullis, and many more!

To Register & for More Information, Visit: www.iowahahperd.org

2016 IAHPERD Convention Schedule & Directory
Simpson College, Indianola, IA, United States - See the full schedule of events happening Jun 21-22, 2016 and explore the directory of Speakers & Attendees.
2016iahperdconvention.sched.org

http://2016iahperdconvention.sched.org/
Vendors / Exhibits

Attend sessions by top presenters including: local, state, district and national teachers of the year. Also, take advantage of visiting our vendors/exhibitors (see below) in the exhibit hall for the newest equipment and materials available.

**Vendors/Exhibitors**

- **Musical PE Plus**
- **USTA Missouri Valley**
- **Drake University**
- **Professional Educators of Iowa**
- **Tchoukball**
- **Let’s Move, Active Schools**
- **Iowa PGA**
- **Midwest Dairy Council**
- **US Games**
- **American Heart Association**
- **Heart Zones, Inc.**
- **Iowa Bowling Proprietors Assoc.**
- **ADA Sports and Rackets**
- **Shape America Central District**
- **Eyes Open Iowa**
- **Interactive Health Technologies**
- **Human Kinetics**
- **IA Department Natural Resources**

*Join IAHPERD…Attend Convention… GROW Professionally!*
Leaders from the nine Central District states met in Steamboat Springs, CO, this July to hone their skills as leaders for SHAPE America and our profession. The summit theme, “Strengthen Your CORE: Communicating Opportunities and Resources with Excellence,” was used to help attendees develop ways to assist members in becoming more efficient advocates for our profession.

Keynotes for the summit were former Central District Executive Director Sally Scherrer and SHAPE America Board Member Dennis Docheff. The conference kicked off with Sally discussing what it takes to be a leader. The foundation for her presentation was the book The Carpenter: A Story About the Greatest Success Strategies of All.

Dennis Docheff continued with a presentation on how to create energy toward the initiatives an individual or organization wishes to pursue. His theme was based on the book Brains on Fire: Igniting Powerful, Sustainable, Word of Mouth Movements.

Further sessions included advocacy and technology integration. Permeating every session was an opportunity for participants to develop action plans to use either individually or in their respective states.
Importance of Strength Training in Secondary Physical Education Programs

Chelsee Short
May, 201

This Study by: Chelsee Shortt

Entitled: Importance of Strength Training in Secondary Physical Education Programs,

has been approved as meeting the research paper requirement for the Degree of Masters of Arts in Physical Education

Dr. Ripley Marston,
Chair, Research Project Committee

Dr. Fabio Fontana,
Research Project Committee Member

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ABSTRACT

Strength training is beneficial and the related knowledge base is necessary for every student to obtain. To graduate physically literate students, as the National Physical Education Standards suggest, resistance training must be implemented into the Physical Education curricula. Strength training is far less injurious than many sports and under the supervision of a qualified professional, injury risk is dramatically decreased. Strength training may prevent injury in active students by reducing strength imbalances and supporting the skeletal structure during sport. Strength training benefits the adolescent physical self through an increase in muscle mass and strength. Students who show increases in strength have self reported improvements in confidence, daily activities, body image, and self-efficacy. Strength training may change body composition and improve hormonal functions of Insulin and Leptin leading to treatment measures for obese students. When teaching strength training to adolescents, the program should emphasize form over strength. Weights lifted should never be a competition with others, and never sacrifice form for the weight being lifted. Strength training will improve students’ fitness levels, self-perception, and health. The purpose of this review was to demonstrate the need for quality strength training programs to be implemented into secondary physical education curricula.
INTRODUCTION:

The American College of Sports Medicine (2013) lists the health related fitness components as cardiorespiratory endurance, muscular endurance, muscular strength, flexibility, and body composition. To assess these areas of fitness, many Physical Education programs are using FITNESSGRAM®. FITNESSGRAM® is a fitness-testing program gaining popularity in physical education curriculums across the United States. The state of Texas, Georgia and Delaware require it as part of the physical education curricula in their state (Cooper, 2014). In Texas, only 8% of male and female high school seniors, for the 2007-2008 school year, met these health related fitness components using FITNESSGRAM® (Texas Education Agency, 2010).

The muscular strength and muscular endurance components of fitness may be assessed by a cadence push-up test or pull-up test (PYFP, 2010). In Texas, for the 2013 school year 9th grade students met the FITNESSGRAM® standard for upper body strength and endurance at 68% of boys and 76% of girls and twelfth grade students met the standard at 66% of boys and 72% of girls (Allums-Featherston, Bai, Welk, 2014). The standard listed for the push-up test is 7 for a 17-year-old female and 18 for 17-year old males (FITNESSGRAM Performance Standards, 2014). This is significantly lower than the National Physical Fitness Award standards, females’ 16 push-ups and males’ 37 push-ups (The President’s Challenge, 1998).

Some students may struggle to pass these tests due to lack of strength related to their body weight. Building strength is the remedy for these struggling students. Effective teachers modify and prescribe fitness regimens that will help their students achieve a healthy level of fitness. As it pertains to strength training, Physical Education specialist may experience lack of support needed to implement a strength-training regimen in their curriculum. Administrators and parents may have some hesitations about strength training due to past studies indicating harmful injury risk associated with strength training (Brady, Cahill, & Bonder, 1982; Brown & Kimball, 1983). Despite the early research against the safety of strength training, the more recent literature review would suggest that strength training is safe, effective, boosts self-esteem, and can improve body composition (Benjamin and Glow, 2003, Guy and Micheli, 2001, & Lloyd et al., 2013).

This literature review looked at the physical and psychological benefits of gaining muscular strength and endurance and what guidelines are needed for physical educators who teach strength training in their curriculum. Weight lifting, strength training, and resistance training, are all synonymous to each other and will be used interchangeably throughout this paper. This review supports Physical Education Specialist to meet the National Physical Education Standards. In particular, National Physical Education Standard 3 that states, “The physically literate individual demonstrates knowledge and skills to achieve and maintain a health enhancing level of physical activity and fitness” (Shape America, 2014, pg. 1).

Purpose Statement:
The purposes of this review were to:
1. Review the physical benefits of strength training
2. Review the psychological benefits of strength training
3. Suggest strength-training protocols for adolescents
Definitions:

**Adolescent**: A person who is developing from a child to an adult

**Body Composition**: the way the body is put together or arranged

**Injury**: act or event that causes someone to no longer be healthy or in good condition

**Insulin Resistance**: reduced sensitivity to insulin by the body’s insulin dependent processes. Associated with type II diabetes but often occurs in the absence of diabetes

**Leptin**: Hormone produced by fat cells that communicates with the hypothalamus to suppress appetite and use stored fat as energy.

**Obesity**: A condition characterized by an excessive accumulation of body fat, persons with a body mass index of 30 or higher.

**Quality of Life**: higher standard of living

**Self Efficacy**: Self perception of empowerment

**Torque**: Force that produces or tends to produce rotation

**Training Protocol**: System of rules to that explain correct conduct to be followed

**Weight Training**: a system of conditioning involving lifting weights for the purpose of strength and endurance.

Research Questions of interest:

1. What is the injury risk of strength training and is strength training effective at preventing injury?
2. How does strength training improve the health of obese adolescents?
3. How does strength training improve mental health in adolescents?
4. What is the recommended strength training protocol for adolescents?

Justification:

In our society, where obesity and suicide/depression rates among adolescents are rising, it is important to teach secondary students methods of preventing these health complications. Strength training can provide many benefits for every secondary student, not just the adolescent athlete. Strength training is also a tool like many sports that, if taught young and well, students can continue to use the skill into their adult lives. This review may serve as a resource as justification for the importance and the benefits of strength training.

**STRENGTH TRAINING INJURY RISK AND PREVENTION EFFECTIVENESS**

Past research on resistance training programs have generated some doubts about the safety of strength training with adolescents (Brady, Cahill, & Bonder, 1982 and Brown & Kimball, 1983). More recently the New York Times released an article stating that weightlifting injuries were on the rise (Bachelor, 2010). Bachelor (2010) noted the increase could be due to a rise in unsupervised novice adult recreational weightlifters.

The doubt that has been casted on strength training is overpowered by several studies indicating its safety. With proper education and supervision, the risk of injury is low. US athletics average .57 injuries per 100 hours of participation in sport. Where as, weight training injury rates are .0035 injuries per 100 hours (Hamill, 1994). Another study resulted in a low injury risk with .055 injuries per 100 hours of participation of weight training (Faigenbaum and Myer, 2010). Myer, Quatrain, Khoury, Wall, & Hewett (2009) found that among all other age groups for weightlifting injuries, children and adolescents rank among the lowest for severe injuries.
Strength training has a positive effect in the prevention of injuries in varsity and recreational sports. The prescription of strength training is highly recommended for adolescents in varsity sports (Abernathy & Bleakly, 2007). Preseason conditioning and strength training have proven effective in the reduction of injury due to physical readiness of the sport. Asking, Kraals', & Torstensson (2003) investigated the utilization of preseason strength training and the occurrence of hamstring injuries using elite males’ soccer teams. The team had thirty participants with an average age of 24-26 years. Fifteen of the thirty participants underwent ten weeks of specified hamstring strengthening exercises in addition to their normal preseason routine. Tests they used to measure hamstring strength were a concentric (contraction phase) and eccentric (relaxation phase) measurement of torque strength. A thirty-meter sprint and degree of range of motion at the hip flexor were also tested. The trained group recorded significantly lower injury rates (3/15) than the control group (10/15) (Asking, Kraals', & Torstensson, 2003).

Females are at greater risk for severe knee injuries, potentially due to lower body joint mechanics and/or the lack of neuromuscular training (Myer, Ford, & Hewett, 2004). Untrained female athletes are 4.68 times more likely to have severe knee injuries than untrained male athletes and 3.6 times more likely than female athletes who strength train (Hewitt, Lindenwold, Riccobene, & Noyes, 1999).

Plyometric and strength training protocols in the core and lower extremities have shown to be effective in reduction of severe knee injury risk in young female athletes (Myer, Ford, Brent, Hewitt, 2006). Myer, Ford, Brent, & Hewett (2006) studied 53 females (mean age 15.6) in a variety of high school athletics. The ladies went through a six-week training of plyometric, core and strength training exercises. A variety of explosive jumps were used for the plyometric exercises. Core training consisted of a variety of exercise on a BOSU or stability ball. Strength training included two sets of basic weight lifting exercises, squat, press, bench, leg curl, DB hang clean, lat pull down, assisted hamstring curl, back fly and bicep circuit. Training was performed with two of the three components three times a week so each training regimen was performed twice a week. Females in this study saw significant strength gains; 92% increase in squat 1RM (maximum weight person can lift for one repetition), and 20 % increase in bench maximum. The degree of the knee movement at impact decreased on both the right and left sides indicating that knee stability improved significantly. Leg power also improved significantly as right single leg jump increased by 10 cm and left leg jump increased by 8.5cm (Myer, Ford, Brent, & Hewett, 2006).

Untrained individuals tend to have a dominant side due to preferential usage. This can lead to an athlete building imbalanced strength by loading and stressing one side more than the other. A right and left strength or flexibility imbalance as small as 15% increases injury risk of lower body extremities significantly (Knack, Bauman, Jones, Harris, & Vaughan, 1991). Prone and supine strength imbalances increase injury risks as well. Quadriceps and hamstring strength imbalances have shown to increase in hamstring injuries. Australian football players who implemented hamstring-strengthening exercises reduced the occurrences of hamstring strains in the competitive season (Orchard, Marsden, Lord, & Garlick, 1997).
Strength imbalances may cause athletic injury but proper strength training has shown to reduce these imbalances. Alfredson, Petiole, Jonsson, & Lorentzon (1998) studied recreational runners with chronic Achilles tendonitis. All participants showed concentric plantar flexion strength imbalance of 11% and eccentric strength imbalance of 12% from injured calf to non-injured calf. Participants performed twelve-weeks of calf strengthening exercises. The injured calf gained comparable strength to the non-injured calf. This twelve-week rehab allowed participants to return back to pre-injury activity and pain levels (Alfredson, Petiole, Jonsson, & Lorentzon, 1998). In a study of Division I athletes, female athletes with weakness of the right gluteus maximus or left hip abductor had a history of developing lower back pain. Strengthening of the left side reduced the occurrences of lower back pain to nearly zero (.99), even in athletes with a history of the injury (Nadler et al., 2000). This data can be applied to adolescent strength programs, as strength imbalances are common in untrained individuals.

Strength training may reduce bone fractures. Clark, Tobias, Murray, & Boreham (2011) surveyed 1500 children in which 26% reported having had a bone fracture. Among these fractures 74% were upper limbs. Subjects with a prior injury were found to have a positive correlation with high aerobic fitness levels and low grip strength. Muscle can act as a shock absorbent for the bones, thereby protecting the skeleton from the occurrence of injury. A preventative strategy measure for fractures would be to increase muscle mass and bone density (Clark, Tobias, Murray, & Boreham, 2011).

Proper education and utilization of sound training protocols will lead to prevention of strength training injuries. Learning proper technique and being supervised by a trained professional are essential elements if an environment conductive to learning is to be established. A Physical Education Specialist is a trained professional who can teach students proper exercise techniques and provide adequate supervision. A quality physical education curriculum is one that graduates physically literate individuals who pursue a healthy active lifestyle into adulthood. Strength training can truly be a great addition to secondary physical education programs.

**THE EFFECT OF STRENGTH TRAINING ON OBESE ADOLESCENTS**

One in five adolescents in the United States are obese (NCHS Obesity Data 2011-2012, 2014). Strength training has shown significant benefits in the prevention and treatment of obesity in adolescents. While body weight movements serve as the standard for assessment of muscular strength, these types of exercises may be too difficult for overweight and obese adolescents. Strength training allows overweight/obese individuals to increase their strength and lean muscle mass by using a weight that is appropriate for their strength levels as opposed to bodyweight movements (Payne, Marrow, Johnson, & Dalton, 1997).

Students who engage in strength training may reap the benefits in as little as six weeks. Lau, Yu, Lee, and Sung (2004) conducted a six-week study with obese adolescent Chinese students. Health benefits of the program were evident after following a three-day circuit-training program for six weeks. Exercises included chest press, leg press, leg extension, leg curl, shoulder press, lat pull down, modified push up, heel raises and tricep extension. A five-repetition maximum was taken for each lift. Weights, set, repetitions and stations were adjusted according to the training progression. There was a significant decrease in systolic and diastolic blood pressure.
pressure and resting heart rate. There was a
significant increase in bone density and overall upper
and lower body strength. Participants improved their
chest strength by an average of 33.9 pounds and their
leg strength by an average of 89.4 pounds (Lau, Yu,
Lee, & Sung, 2004).

Short-term interventions of strength training
can benefit overall body composition of overweight
and obese students. McGuigan, Tatasciore, Newton,
and Pettigrew (2008) conducted an eight-week study
with obese children who were on or above the 85th
percentile of BMI for their age. These children were
put through an eight-week training protocol with two
days of controlled strength training using dumbbells,
sandbags, resistance bands, and medicine balls. The
third training day was an explosive day of many
jumps and fast exercises. The training protocol
resulted in an increase in lean body mass by 5.6%,
body fat decreased 2.6%, and the number of push-ups
children could perform increased by 85% (McGuigan,
Tatasciore, Newton, & Pettigrew, 2008).

Secondary students should have more
accessibility to extensive strength training
opportunities. SRO, McGuigan, Pettigrew, and
Newton (2009) conducted a study looking at the
duration of strength training regimens. The
researchers looked into programs that were 8, 16 and
24 weeks in length. The subjects were 7-12 year old
children with a BMI in the 85th percentile or higher
for their age group. The children went through a
three-day strength-training program tiered for the
length of the program. Two days consisted of
controlled lifting with resistance bands, dumbbells,
medicine balls, and sandbags. The third training day
consisted of explosive, fast exercises. The eight-week
group had the similar lifting protocol to that of Lau’s
study of higher repetition, lower weight. The sixteen
and twenty-four week groups increased intensity with
heavier loads and fewer reps after week eight and
week sixteen. The results of this protocol showed that
the longer the program, the greater the benefits.
However, significant changes in body composition
were reported after only eight weeks. Participants
decreased body fat by 6% after eight weeks, 6.8%
after sixteen weeks, and 8% at twenty-four weeks.
Lean muscle mass significantly increased by 4.9% in
participants after sixteen weeks of training and 6.2%
after twenty-four weeks of training (Sgro, McGuigan,
Pettigrew, & Newton, 2009).

Gabriel Sahib et al. (2006) conducted a study
with overweight and obese Latino adolescent males.
The strength-training regimen included two days a
week of strength training for sixteen weeks. The
beginning phases emphasized technique with only one
set of five different exercises. Weeks five through ten
involved heavier loads and two sets of the lifts. In the
final weeks, subjects progressed to three sets of 90%
or more of their baseline weights. The results showed
a 3.7% decrease in fat mass, a 7.4% increase in lean
muscle mass, and a 6.7% decrease in body fat
percentage (Shabi et al., 2006).

Another key physical aspect to consider is the
digestive hormone that may be altered in children
with obesity. Insulin is a digestive hormone,
produced by the pancreas, which regulates glucose
(sugar) in the bloodstream (Nussey & Whitehead,
2013). This hormone plays an important part in the
use of the glucose as energy or stored energy in the
form of glycogen or body fat. Overweight or obese
children can develop insulin resistance, which is the
beginning stage of type II diabetes. Insulin resistance
means that more insulin is required to respond to
glucose in the bloodstream, which is generally caused
by excessive calorie consumption and lack of physical
activity (Bray and Hamman, 2014).
Strength training can help the prevention of type II diabetes through increasing insulin sensitivity. Gabriel Sahib et al. (2006) conducted a ten-week resistance training research study and reported an increased in the body’s response to insulin or insulin sensitivity by 7.3%. Ten of the eleven subjects saw improvements in their insulin sensitivity. Six of the ten subjects from the control group, no resistance training, saw an increase in insulin resistance (Shabi et al., 2006).

Another digestive hormone that may be altered in overweight and obese individuals is leptin. Leptin is a hormone produced by adipose cells that signals to the brain when energy intake is greater than energy expenditure. Chronic overeating can lead to leptin resistance (Klok, Jakobsdottir, & Drent, 2007). Strength training has been shown to improve leptin sensitivity after just a six-weeks program. Lau et al. (2004) conducted a study with Obese Chinese Adolescents. The participants followed a strength training protocol of an hour session of circuit training, three days a week, for six-weeks. Lau et al. (2004) found that after the strength training, the subjects had significantly lower levels of relative leptin. This indicated that leptin sensitivity had increased, allowing the hormone act more effectively on target receptors. Longer training protocols have seen significant decreases in plasma leptin levels reporting that leptin sensitivity may be increased with resistance training. Twelve obese middle-aged men followed a three-month strength-training regimen similar to Lau et al. (2004), three, one-hour training sessions a week. The results showed that strength training decreased plasma leptin levels by 20%, increasing the sensitivity of leptin significantly (Klimcakova et al., 2006).

Obesity may cause a number of health challenges for an individual. Physically, mentally, socially, emotionally, and functionally Obese adolescents suffer 5.5 times more than the average healthy student (Schemer, Burwinkle & Varni, 2003). Physical Education Specialist needs to provide their students with the tools necessary to improve the quality of life for the student. When strength training improves physical health, it may also improve psychological health as well (Signh, Clements, & Fiatarone, 1997).

**EFFECTS OF STRENGTH TRAINING ON MENTAL HEALTH**

Physical activity, in general, has been shown to boost mental health (Dinghy, 2007). There is strong evidence that aerobic and strength training are capable of alleviating stress and anxiety while boosting moods (Fox, 1999, Feiden, 2011). Fit adolescents feel more confident (Feiden, 2011). Strength training can begin at any level of fitness and it produces noticeable positive changes in body composition, muscular strength, and muscular endurance in a short period of time (Palmer, Palmer, Michiels, & Thigpen, 1995). Aerobic training, in contrast, can take time to build up to a noticeable state of change in fitness level. Positive changes produce optimistic behaviors in persons who are in a poor mental state.

The adolescent population is at the greatest risk as suicide rates continue to climb. The Youth Risk Behavior Surveillance (2013) indicated that 29.9% of high school students reported feeling sad and hopeless almost every day for the past two weeks or longer. Even more alarming, 17% of high school students nationwide have seriously thought about committing suicide (Kann et al, 2014). Depression in adolescents is a real and tragic health crisis. Implementation of strength training in short term (four-weeks) rehabilitation programs found that patients experience significant decreases in depressive...
symptoms (Palmer, Palmer, Michiels, & Thigpen, 1995). There is a strong correlation between strength gains and positive changes on a depression scale (Singh, Clements & Fiatarone, 2005). Strength training builds physical abilities allowing people to perform daily tasks, physically move with ease, have more energy, and function socially.

Holloway, Beuter, and Duda (1988) studied 59 untrained high school females as to the impact strength training had on their quality of life. The control group was given a self-evaluation asking various questions about the strength workout performed, various daily tasks, and confrontation skills. The weight-training group followed a 12-week strength protocol with various resistance days cycling light, medium, and heavy. At the end of the 12 weeks, the weight-training group had significant positive changes in perceived physical ability, self-efficacy, self-presentation, and confidence. The control group also had significant changes in their desire to lose weight or starve themselves, scoring an improved score on the Eating Disorder Inventory. The data suggests that strength training was perceived as having improved the overall quality of life (Holloway, Beuter, & Duda, 1988).

Obese adolescents have quality of life ratings similar to adolescents with cancer, suffering with physical, emotional, social, mental and functional health 5.5 times more than the average adolescent (Schemer, Burwinkle & Varni, 2003). Ohira, Schmitz, Ahmed, & Yee (2006) studied breast cancer patients who participated in a six-month study using weightlifting regimen to improve QOL and reported that patients experienced increases in lean muscle mass and upper-body strength. Patients reported high QOL scores in physical and psychosocial domains. This demonstrates how strength training can further benefit adolescents on a psychological level and improve their QOL (Ohira, Schmitz, Ahmed, & Yee, 2006).

Levinger, Goodman, Hare, Serums, and Selig (2007) studied individuals with high and low metabolic risk factors, those at greatest risk for type II diabetes. Baseline measurements were taken for body composition, aerobic capacity, strength measurements, capacity to perform daily activities, and perceived quality of life. Participants were retested after completing a 10-week strength-training program. Strength training improved lean muscle mass and strength. Subjects with low metabolic risk factors improved the time it took to perform daily tasks by 8.8%. Subjects with high metabolic risk factors reported a 9.7% decrease in time it took to complete daily tasks and self-reported improvement in QOL (Levinger, et al., 2007).

Healthy body image and improved self-perception may result from strength training. The Texas Youth Fitness Study looked at fitness testing scores and academic success. They found that fit students had more confidence about their abilities and positive perception about their shape and size (Feiden, 2011). A study of female college students reported increased feelings of strength, health, and self after a twelve-week strength training session. Positive self-perception was achieved despite no significant reductions in body weight or body fat (Ahmed, Hilton, & Pitch, 2002). Williams and Cash (2001) studied a group of trained male and female college students using a circuit-training program. The six-week circuit program successfully increased upper body and lower body strength, despite being trained individuals. Participants’ self-ratings showed an increase in body satisfaction, more self-worth, and a reduction in social anxiety (Williams and Cash, 2001).
Strength training has the unique capability of increasing positive self-perception with physical strength gains. Psychological well-being is closely and strongly related to physical well-being (Singh, Clements, & Fiatarone, 2005). The boost of physical strength has a clear, strong correlation to positive physical and psychological benefits. Becoming physically stronger may result in becoming more mentally resistant to psychological malfunctions.

**RECOMMENDED STRENGTH TRAINING PROTOCOL FOR ADOLESCENTS**

Physical Education has a unique class environment conducive for making a drastic difference in the fitness level of their students. Strength training should be incorporated in the secondary curriculum as a unit. Strength training could be a club activity to encourage strength training as part of a healthy lifestyle. Group resistance training programs are more effective in increasing fitness levels than recreational games (Siegel, Camaione, & Manfred, 1989).

All students can begin with the basics of strength movements using their body weight to perform the exercise. Proper technique and full range of motion should be taught and emphasized with each exercise (Feigenbaum, Westcott, Loud, & Long, 1999). The Physical Education specialist can determine the age at which students can begin strength training. This decision should be based on the maturity and physical capability of the student (Wulkow et al., 2013). The student should be mature and responsible enough to conduct him or herself in the weight room appropriately. Safety of all students is of the utmost importance. Students who do not have the mature capability to be coached in a controlled setting should refrain from participation due to the safety of the remaining students. Strength training may begin at different ages for different students as each individual matures at different speeds.

When students begin strength training, the weight load should be light and the repetitions should be high. A suggested beginning program for untrained individuals is 1 set of 13 to 15 repetitions of upper and lower body exercises performed 2 to 3 days a week. A period of intensive instructional direction is advised. Instruction should provide accurate and clearly understood cues for proper form. The emphasis is placed upon the development of the student and not on the amount of weight being lifted. Highly trained individuals should supervise the students training program (Feigenbaum, Westcott, Loud, & Long, 1999).

Maximum lifts should not be attempted. When an adolescent is ready for a program with more measurement on strength, a 4-6 repetition maximum can be used to accurately predict a student’s one repetition maximum (Dohoney, Chromiak, Lemire, Abadie & Civics, 2002). When students reach the point of tracking their strength gained, they should only be encouraged to see their own personal progress and success and not focus on competing against other students (Wulkow et al. 2013).

After an intensive instructional phase, training load can be increased. Two to three sets of eight to ten repetitions of six to ten different exercises, two to three days a week is advised. Multi-joint exercises should still be kept at a lower training volume, meaning lower weight, higher repetition, and fewer sets (Kraemer, Fry, Frykman, Conroy, & Hoffman, 1989). Training sessions should last no longer than 40 minutes. Technique needs to be emphasized. If a student is demonstrating faults in technique, he/she needs to lower the weight being used for that exercise. All repetitions should be performed with proper
programing for adolescent strength training can be a difficult task. Adolescents are new in their experience with weight training exercises. It is important to consider having detailed exercise instruction, emphasis on proper technique of exercises, and qualified supervision (Feigenbaum et al., 2009). Lawsuits could be filed if the strength program is not properly supervised (Sawyer & Sawyer, 2011). Students need to be aware of the program goals and this should be overemphasized. Student who are poorly informed are at greater risk for injury (Guy & Micheli, 2001).

**CONCLUSION**

Implementation of strength training into a secondary curriculum can range from simply inserting a strength-training component as part of a warm up to a fully developed, semester long, strength-training course. Training for teachers is available through various community resources. Physical therapists, strength and conditioning specialists, athletic trainers and personal trainers are local professionals who can provide insight to strength programs for youth. Collegiate classes are opportunities to gain knowledge and insight related to the latest techniques of weight training exercises.

Physical education specialists should implement strength-training initiatives in their secondary PE programs. If there is not a weight training facility available for use, implementation of strength training can be done with any sort of resistance equipment. Resistance bands, sandbags, dumbbells, medicine balls are inexpensive equipment that Physical Education programs can use to teach functional strength exercises such as the squat, deadlift, press, row, and bench.

In summary, strength training is safe and effective, while building confidence and self-esteem. Strength training is time efficient and all fitness levels can participate. Students who strength train can reap an array of benefits in a short period of time. Strength training reduces the risk of obesity, corrects muscle imbalances, and aids in the prevention of injury. Strength training is a lifelong skill that can improve quality of life for all individuals. Therefore, strength training should be a regular part of every secondary physical education curriculum.
REFERENCES


Jump Rope For Heart and Hoops For Heart are national events sponsored by the American Heart Association and the American Alliance for Health, Physical Education, Recreation and Dance. Students in these programs have fun jumping rope and playing basketball — all while becoming empowered to improve their health and help other kids with heart health issues.

Funds raised through Jump Rope For Heart and Hoops For Heart give back to children, communities and schools through the American Heart Association's work:

- Ongoing discovery of new treatments through research
- Advocating at federal and state levels for physical education and nutrition wellness in schools
- CPR training courses for middle and high school students

Jump Rope For Heart and Hoops For Heart help students:

- Learn the value of community service and contribute to their community's welfare
- Develop heart-healthy habits while being physically active
- Earn gift certificates for free school P.E. equipment from U.S. Games

Call 1-800-AHA-USA1 or visit americanheart.org/jump or americanheart.org/hoops to get your school involved.
Membership Approval Needed

The Executive Board and Legislative Council approved a Conflict of Interest Policy to be placed within the IAHPERD By-Laws. According to the organization's Operating Code, the membership will have an opportunity to approve the policy at this year's state convention in June. The following document can be found at: https://docs.google.com/document/d/1Q7qrbMn3A_x0ceDjCHnU9-2nncIAq-dlwL66IMmC0KM/edit?usp=sharing

In addition, a Whistleblower Protection policy will also be voted on, which is the following:

The Iowa Association for Health, Physical Education, Recreation and Dance will protect whistleblowers against retaliation. It cannot guarantee confidentiality, however, and there is no such thing as an "unofficial" or "off the record" report. The association will use its best efforts to keep the whistleblowers' identity confidential, unless:
1. The person agrees to be identified.
2. Identification is necessary to allow the IAHPERD or law enforcement officials to investigate or respond effectively to the report.
3. Identification is required by law.
4. The person accused is entitled to the information as a matter or legal right in disciplinary proceedings.

IAHPERD officers and/or members may not retaliate against a whistleblower with the intent or effect of adversely affecting the terms or condition of service (including but not limited to, threats of physical harm, loss of position, punitive work assignments, or impact on compensation).