Physical education (often abbreviated Phys. Ed. or P.E.) or gymnastics (gym or gym class) is a course taken during primary and secondary education that encourages psychomotor learning in a play or movement exploration setting. The term physical education is commonly used to denote they have participated in the subject area rather than studied it.

The primary aims of physical education have varied, based on the needs of the time and place. Most modern schools’ goal is to provide students with knowledge, and the enthusiasm to maintain a healthy lifestyle into adulthood. Activities included in the program are designed to promote physical fitness, to instill knowledge and understanding of rules, concepts, and strategies. Students learn to either work as individuals, in a wide variety of competitive activities. In all states in the United States, physical education is offered to students from grades K through 12. Most states do require physical education from 6th through 9th grades and offer "elective" physical education classes from 10th through 12th grades.

Physical Education trends have developed recently to incorporate more activities into P.E. Introducing students to lifetime activities like bowling, walking/hiking, or frisbee at an early age can help students develop good activity habits that will carry over into adulthood. Some teachers have even begun to incorporate stress-reduction techniques such as yoga and deep-breathing. Teaching non-traditional sports to students may also provide the necessary motivation for students to increase their activity, and can help students learn about different cultures. For example, while teaching a unit about Lacrosse (in say Arizona), students can also learn a little bit about the Native American cultures of the Northeast and Eastern Canada, where Lacrosse originated.

Teaching non-traditional (or non-native) sports provides a great opportunity to integrate academic concepts from other subjects as well (social studies from the example above), which is required of every P.E. teacher these days.

There are also many different models that have been created as of late that change the face of P.E. One example of this is the Health Club Model. Teaching with this model is very different from the "Organized Recess" of 20 or 30 years ago. Spun off the boom in the health club industry, a P.E. class provides many of the same "classes" that are found at a health club. Monday a student could be doing kickboxing, the next
day is yoga, Wednesday the student is doing Spinning. This type of program provides a great variety of activity for students, a lot a high intensity exercise, and helps introduce these activities for use later in life. The Sports Education model is another example of a new model were the class is run like a sports league, with students taking the role of coaches, scorers, referees, and reporters as well as players. Using this model, students practice management skills, mathematic skills, and writing skill all while learning sports skills and being active.

Another trend is the incorporation of Health and Nutrition to the physical education curriculum. The Child Nutrition and WIC Reauthorization Act of 2004 required that all school districts with a federally funded school meal program develop wellness policies that address nutrition and physical activity. While teaching students sports and movement skills, P.E. teachers are now incorporating short health and nutrition lessons into the curriculum. This is more prevalent at the elementary school level, where students do not have a specific Health class.

Today many states require Physical Education teachers to be certified to teach Health also. Many colleges and Universities offer both Physical Education and Health as one certification. This push towards Health education, is begining in the intermediate level, including lessons on bullying, self esteem and stress and anger management.

**International P.E.**

In the United States, the physical education curriculum is designed to allow school pupils a full range of modern opportunities, dozens of sports and hundreds of carefully reviewed drills and exercises, including exposure to the education with the use of pedometer, GPS, and heart rate monitors, as well as state-of-the-art exercise machines in the upper grades. Some martial arts classes, like wrestling in the United States, and Pencak Silat in France, Indonesia and Malaysia, are taught to teach children self-defense and to feel good about themselves. The physical education curriculum is designed to allow students to experience at least a minimum exposure to the following categories of **activities:** *aquatics, conditioning activities, gymnastics, individual/dual sports, team sports, rhythms, and dance.* Students are encouraged to continue to explore those activities in which they have a primary interest by effectively managing their community resources.

In these areas, a planned sequence of learning experiences is designed to support a progression of student development. This allows kids through 6th grade to be
introduced to sports, fitness, and teamwork in order to be better prepared for the middle and high school age. In 1975, the United States House of Representatives voted to require school physical education classes include both genders. Some high school and some middle school PE classes are single-sex. Requiring individuals to participate in physical education activities, such as dodgeball, flag football, and other competitive sports remains a controversial subject because of the social impact these games have on young children. It is, however, important to note that many school budgets have seen cutbacks and in some cases physical education programs have been cut - leaving educators and students to address these needs in other ways.

In Singapore, pupils from primary school through junior colleges are required to have 2 hours of PE every school week, except during examination seasons. Pupils are able to play games like football, badminton, 'captain's ball' and basketball during most sessions. Unorthodox sports such as tchoukball, fencing and skateboarding are occasionally played. In more prestigious secondary schools and in junior colleges, sports such as golf, tennis, shooting, squash are played. A compulsory fitness exam, NAPFA, is conducted in every school once every year to assess the physical fitness of the pupils. Pupils are given a series of fitness tests (Pull-ups/ Inclined pull-ups for girls, standing broad jump, sit-ups, sit-and-reach and 1.2 km for secondary/2.4 km for junior colleges run). Students are graded by gold, silver, bronze and fail. NAPFA for Year 2 males in junior colleges serves as an indicator for an additional 2 months in the country's compulsory national service if they attain bronze or fail.

In Scotland, pupils are expected to do two periods of PE in first year, one in second year and two in third and fourth year. In fifth and sixth year, PE is voluntary.

In Nepal, physical education is poor and poorly organized because the educational system has only been recently established and is still adjusting to recent changes and updates. Nepal has not gone very far in the sector of education because the educational history of Nepal is very short. Before 1951, Nepal was under a monarchy. The monarchy did not wish to provide education to the citizens as it did not want them to be educated and therefore politically aware. Institution of democracy did not result in a modern educational system; what education there was little better. After 10 years of democracy the country again plunged into an autocratic monarchy. In 1990 democracy was restored and the education sector started to flourish. Since then, Physical Education became part of the school curriculum. At the primary level (1-5),
some minor and local games are now taught, like hide and seek and some athletic based local events. In lower secondary level (6-8), the students are taught general concepts on major games like football, volleyball, basket ball, Kho-Kho and Kabaddi. They also learn some athletics like 100m race 100*4m relay race and some other minor and lead up games. In class Nine and ten it is an optional subject where they specialize in some games like volleyball, basketball, handball, cricket, Kho Kho Kabaddi, Badminton, table tennis and some athletics are also taught. In college it is taught in the education stream. Even though it is included in school curriculum, Nepal is not able to produce any worthwhile products of games and sports for reasons ranging from poverty to decentralized government.

**Adapted Physical Education**

**Adapted Physical Education** (APE) is a sub-discipline of physical education. It is an individualized program created for students with disabilities in order to ensure safe and successful physical education opportunities. Physical education involves physical fitness, motor fitness, fundamental motor skills and patterns, aquatics skills, dance skills, individual, group games, and sports (including lifetime sports). Adapted Physical Education is a direct service, not a related service.

**Students Who Receive Services**

Students who qualify for adapted physical education include students with disabilities as specified in the **Individuals with Disabilities Education Act** (IDEA). This includes children who have:

**Autism**

Developmental disability significantly affecting verbal and nonverbal communication and social interaction, generally evident before age 3, that adversely affects a child's education performance. Other characteristics often associated with autism are engagement in repetitive activities and stereotyped movements, resistance to environmental change or change in daily routines, and unusual responses to sensory experiences.

**Blindness**

Concomitant hearing and visual impairments, the combination of which causes such severe communication and other developmental and educational needs
that they cannot be accommodated in special education programs solely for children with deafness or children with blindness.

**Deafness**

Hearing impairment that is so severe that the child is impaired in processing linguistic information through hearing, with or without amplification, that adversely affects a child's educational performance.

**Emotional Disturbance**

Condition exhibiting one or more of the following characteristics over a long period of time and to a marked degree that adversely affects a child's educational performance: inability to learn that cannot be explained by intellectual, sensory, or health factors; inability to build or maintain satisfactory interpersonal relationships with peers and teachers; inappropriate types of behavior or feelings under normal circumstances; general pervasive mood of unhappiness or depression; and a tendency to develop physical symptoms or fears associated with personal or school problems.

*This term also includes schizophrenia.*

**Hearing Impairment**

Impairment in hearing, whether permanent or fluctuating, that adversely affects a child's educational performance but that is not included under the definition of deafness in this section.

**Multiple Disabilities**

Concomitant impairments (such as mental retardation-blindness, mental retardation-orthopedic impairment, etc.), the combination of which causes such severe educational needs that they cannot be accommodated in special education programs solely for one of the impairments.

*The term does not include deaf-blindness.*

**Orthopedic Impairment**

Severe orthopedic impairment that adversely affects a child's educational performance. The term includes impairments caused by congenital anomaly (e.g., clubfoot, absence of some member, etc.), impairments caused by disease (e.g., poliomyelitis, bone tuberculosis, etc.), and impairments from other causes (e.g., cerebral palsy, amputations, and fractures or burns that cause contractures).
**Other Health Impairment**

Having limited strength, vitality or alertness, including heightened alertness to environmental stimuli, that results in limited alertness with respects to the educational environment, that: is due to chronic or acute health problems such as asthma, attention deficit disorder or attention hyperactivity disorder, diabetes, epilepsy, a heart condition, hemophilia, lead poisoning, leukemia, nephritis, rheumatic fever, and sickle cell anemia; and adversely affects a child's educational performance.

**Specific Learning Disability**

General: disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, that may manifest itself in an imperfect ability to listen, think, speak, read, write, spell, or to do mathematical calculations, including conditions such as perceptual disabilities, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia.

*Disorders not included: learning problems that are primarily the result of visual, hearing, or motor disabilities, of mental retardation, of emotional disturbance, or of environmental, cultural, or economic disadvantage.*

**Speech or Language Impairment**

Communication disorder, such as stuttering, impaired articulation, a language impairment, or a voice impairment, that adversely affects a child's educational performance.

**Traumatic Brain Injury**

An acquired injury to the brain caused by an external physical force, resulting in total or partial functional disability or psychosocial impairment, or both, that adversely affects a child's educational performance. The term applies to open or closed head injuries resulting in impairments in one or more areas, such as cognition; language; memory; attention; reasoning; abstract thinking; judgement; problem-solving; sensory; perceptual, and motor abilities; psychosocial behavior; physical functions; information processing; and speech.

*The term does not apply to brain injuries that are congenital or degenerative, or to brain injuries induced by birth trauma.*
**Visual Impairment Including Blindness**

An impairment in vision that, even with correction, adversely affects a child's educational performance.

*This term includes both partial sight and blindness.*

Infants and toddlers who need *early intervention* services because of *developmental delays* in cognitive, physical, communication, social, emotional or adaptive development can also qualify for adapted physical education. The state can choose to include infants and toddlers who are under three-years old who are “at risk” for experiencing a developmental delay if early intervention services are not provided. Students can also qualify for adapted physical education services under Section 504 of the *Rehabilitation Act of 1973*. Under these guidelines, a person with a disability is anyone who has a physical or mental impairment that limits one or more major life activities, has a record of impairment, or is regarded as having an impairment.

A fourth group of students who might qualify for adapted physical education are students who are recuperating from injuries, accidents, recovering from noncommunicable diseases, are overweight, have low skills levels, or have low levels of physical fitness. This group is not covered by legislation, but a school districts can decide to develop a plan to meet these students’ physical education needs.

**Laws**

Some key laws that have been influential in the advancement of APE include:

**No Child Left Behind**

Created in 2001, this act puts significant federal support behind the improvement of reading and mathematics scores and compromises other critical curricular areas, including physical education, health, history, art, computer science, and music (Auxter, Pyfer, Zittel, Roth, 2010).

**American with Disabilities Act (P.L. 101-336)**

Created in 1990, this act expanded civil rights protections for individual with disabilities in the public and private sectors. The ADA outlaws discrimination against a person with a disability in employment, public services and transportation, public accommodations, and telecommunications. The ADA requires accessibility in federal and private sectors, including physical education facilities. For example, weight rooms should have accommodate wheelchair users, gym lockers should have key
locks instead of combination locks for those who need it, and gyms with stairs should also have ramps.

**Individuals with Disabilities Education Act (IDEA)**

Created in 1990, IDEA was the reauthorization of PL 94-142 and continued the emphasis upon FAPE, IEP, LRE, and physical education as a direct, educational service. With this reauthorization, person-first terminology was instituted, education of students with disabilities within the general curriculum and parent involvement in educational programming was emphasized.

**Education for All Handicapped Children Act (P.L. 94-142)**

Created in 1975, this act mandated: (a) free appropriate public education (FAPE) for all children with disabilities between the ages of 3 and 21 years; (b) Individualized Education Plan; (c) education in the Least Restrictive Environment; and (d) physical education as a direct, educational service.

To ensure that every child with a disability receives an appropriate education, the Education of the Handicapped Act of 1975 mandated that an individual education program (IEP) be developed for each student with a disability that requires specialized instruction. The IEP should be the cornerstone of the student's education. It should be the living, working document that the teacher and parents use as the basis for the instructional process.

**The Rehabilitation Act (P.L. 93-112, Section 504)**

Created in 1973, this act mandated that individuals with disabilities cannot be excluded from any program or activity receiving federal funds solely on the basis of the disability. Students with disabilities who do not qualify for services under IDEA, yet require reasonable accommodations to benefit from their education must have a written 504 plan. The student's disability and corresponding need for reasonable accommodation are identified and documented in the plan. All school staff involved in the provision of accommodations should be contacted by the 504 coordinator and made aware of their duties and responsibilities.

**Individual Education Program or IEP**

An Individualized Educational Plan (IEP) can be defined as a plan for each student, ages 3 to 21, who qualifies for adapted physical education based on an evaluation. All IEPs are outcome-oriented giving assurance that the student will benefit from special
education and have real opportunities, full participation, independent living, and economic self-efficiency. IEPs are revised once a year by an IEP team. IEPs are developed by the IEP team and based on comprehensive assessment as outlined by guidelines established in IDEA.

**Information in an IEP Includes**

- Student name, date of birth, duration of IEP
- Student strengths and concerns of the parent
- Student present level of academic achievement and functional performance
- Level of participation in the general education curriculum
- Annual academic or functional goals
  - Goals must have an action, condition, and criteria
  - Goals must be measurable, observable, and attainable
- Procedures for measuring student progress
- Any alternate assessments
- Frequency of reports on student progress

Additional information on the IEP include, but are not limited to, specialized transportation, related services, testing accommodations, and transition services.

**Purpose**

Federal law mandates that each student with a disability (SWD) under IDEA, and requiring special education services, have an IEP developed for him/her. An IEP is a written statement for each SWD, outlining individualized needs and is used to establish an appropriate educational placement. Some consider the IEP to be a “management” program to guide appropriate service delivery, which includes the area of physical education.

**Who Must be Present at an IEP for Physical Education Meeting**

- The student when appropriate.
- The parent(s) or guardian(s), or a designated representative.
- A representative of the school administration, other than the child’s teacher, who is qualified to provide or supervise the provision of special education.
- The student’s special educator.
At least one general educator, if the child will receive any services in the general education program.

A member of the evaluation team or a professional able to interpret assessment data.

Any direct or related service personnel who have assessed the student.

The school nurse, particularly if the student has a chronic and/or serious medical condition and/or requires special medical procedures in order to function in the school environment.

An interpreter as required.

Representatives of community agencies that will be responsible for implementing individual transition plans.

If the student has IEP goals being addressed in general physical education, the regular physical educator should report progress on the goals and within the general curriculum to the IEP team.

**Steps in the Assessment and IEP Processes**

1. Referral: A student can be referred by several sources including a teacher, parent, or administrator.

2. Parent Permission: Prior to assessment parent permission is required.
   - 15 days to get the parents permission after the referral.

3. Screening: A non-required preliminary step to determine if a full evaluation is necessary.

4. Assessments: Comprehensive assessment should include formal tests, observations, and conversations with individuals involved in the student's education.
   - Examples of Formal Tests (norm and standardized): TGMD-2, BOT-2, APEAS-II, CTAPE.
     - Conversations: general physical educator, parent, classroom teacher, OT, PT, special educator, and student.
     - Observations: in the natural setting, student and teacher.
**IEP Timeline**

1. 60 days from when parent permission is received, the evaluation should be completed.
2. Revisit the IEP once per year.
3. Re-evaluate the IEP every 3 years unless an IEP team member requests otherwise.

**Who is qualified/responsible/or should provide the assessment?**

- The manner in which assessments are implemented are determined by state guidelines. Contact your state department of education for further guidance.[2]
- IDEA guidelines state assessment must be administered by trained and knowledgeable personnel ([614(3)(a)(iv)]. However, trained and knowledgeable are not clearly defined. Best practice involves administration of adapted physical education assessment by a physical educator who has training and knowledge of the general physical education curriculum, the nature of the student's disability, underlying bases of motor control, behavioral evaluation as applied to the physical education environment, and a variety of adapted physical education evaluation tools.

**Role of the Regular Physical Educator in maintaining the IEP**

- Document progress and achievement of IEP goals.
- Provide students with appropriate learning opportunities and modify teaching strategies to help students meet their IEP goals.
- Assess the student in the areas of motor skills, sports skills, and physical fitness and give that information to the IEP team so appropriate IEP goals can be written for the student.
- Work closely with the related service providers, such as the physical therapist, occupational therapist, and speech therapist as goals are often complimentary.
- Talk with administration and make sure he/she understands the importance of your participation in all phases of the IEP process (assessment, team meetings, goal writing, updates, etc.)
**IEP Tips**

1. State the positive first
2. State strengths and progress first
3. State needs as areas for growth, not weaknesses
4. Make parents feel comfortable (chat, eye-contact, smile, care)
5. Bring documentation of results and progress
6. Allow conversation, but move forward if needed
7. Propose pertinent, measurable, and attainable goals
8. Don’t expect perfection
9. Communicate well
10. Explain the results of the test
11. Bring video documentation to back up your data

**Do all students with disabilities need an IEP for physical education?**

No, federal law mandates that each individual with a disability only under IDEA (13 disabilities) have an IEP developed for him/her if necessary to benefit from their education. If an appropriate assessment is completed and the IEP team decides the student is not safe and/or successful in general physical education without supplementary aids and services, then an IEP should be developed and services provided. A student can have IEP goals related to physical education needs regardless of their educational placement.

**What happens at the end of the year?**

A meeting must take place at least one time a year to make sure the goals of the IEP are being met and to see if any changes must be made.

**What information should I bring to the end-of-year IEP in physical education meeting?**

Sufficient evidence of progress is needed at an end-of-year IEP meeting.

- All written assessment information would be helpful in demonstrating the progress made throughout the semester, including your IEP checklist, and written observations.
- Visual evidence (videos or pictures) showing that the objectives set throughout the year have been addressed.

**Placement Options**

What is the relationship between placement and the IEP?
Decisions based on IDEA qualifications are generally discussed and determined during and IEP meeting. IEP recommendations for services and supports must consider a student's unique needs, the most appropriate environment (Least Restrictive Environment). The Least Restrictive Environment will be based upon the assessment process and where the IEP goals can best be met. There are a variety of placement option which should be considered including:

- Full-time General PE (GPE)
- General PE with a younger class
- Part-time Adapted PE (GPE for some units or parts of a lesson)
- Reverse Mainstreaming
- Small Group or One on One PE
- Separate School
- Home/Hospital

**Adaptations**

APE teachers do not need to reinvent the wheel when looking for activities or games for students with disabilities. APE teachers can take activities used in general physical education and modify or adapt these activities for students with disabilities. If the APE teacher makes the proper modifications, the inclusion or APE experience for the student with a disability and the students without disabilities will be more enjoyable and productive. Making these modifications will hopefully increase practice time and success in an inclusion or APE setting. Four categories of modification for students are Rules, Environment, Equipment, and Instructions (4). By modifying students can have more success in class. Further description of the modification areas are below.

1. Equipment: Objects should vary in size, shape, color, weight, and texture. For example, a student with a visual impairment could use a brightly colored ball or other object during a striking unit. Giving the students the option of which ball to choose allows them the opportunity to create their own level of skill development. Placing a ball in a plastic grocery bag, placing a bell inside of a balloon, and attaching bells to student's shoes are simple ways to accommodate students with visual impairments. A catapult works great for students who may have cerebral palsy or limb limitations during throwing and
aiming activities. Catapults are also great for arm and hand strength development for students who have cerebral palsy or limited mobility of their arms and hands. A student who uses a wheelchair for ambulation could use a noodle as a tagging implement.

2. Environment: Examples include limiting the playing area when movement capabilities are limited or restricted. Having a designated area for equipment when the activity is done (usually behind a mat) so students are not distracted during instruction or during the next activity. Having a certain area in the gymnasium designated as an 'quiet space' for a student with autism to sit for a limited period of time.

3. Instructions – Examples include using a variety of different instructional strategies such as verbal, visual, guided discovery and peer teaching. Social stories can also be an effective method of modified instruction. Some students need to hear and see what they are supposed to do throughout the day.

4. Rules – Rule changes can help to equalize competition. Rules can also be modified to challenge different skill levels within an APE class. Changing rules for a game in an inclusion class can also help a student with a disability become more involved. For example, during game play the team scores one point if the student with a disability is not involved in the scoring process, and two points if they help score the point. Another example for rule modification to create success for a student with a disability would be to give them extra attempt at a skill where general students have only a limited number of attempts, i.e. strikes in baseball.

\textbf{ADAPT-A-BAG}

Adapted Physical Education (APE) teachers are always on the go and may be pressed for time to adapt an activity during APE. This is why it is important to develop or make an adapt-a-bag for these circumstances. An adapt-a-bag, is a bag an APE teacher can bring to each of his or her teaching areas, which can help modify or adapt an activity for a variety of disabilities.
Some simple items to put in an adapt-a-bag are duck tape, velcro, string, dry erase board, bells (jiggling bells inside a balloon), shiny objects, pvc pipe (large and small - one for guide line and one for ramp), plastic shopping bag, and straws. Other objects which may cost little money are blinking balls, bubbles, bubble wrap, horns, jinggling bells inside a balloon, beep balls, and stimulating balls. It is important to remember there can never be too many items in an adapt-a-bag. Household items are great for making modifications in APE. It is important to always be looking and searching for items which can be put into an adapt-a-bag.

Along with these adaptations it is important to understand the individual's disability. For instance, if a student has a vestibular dysfunction, they may need an object that is easier to track. A balloon or a larger ball would be a great adaptation for this student. These students may also be very unstable, so something as simple as a mat beneath them while performing an activity could be a valuable adaptation.

Teaching Suggestions in Physical Education for Common Disabilities

**Autism**

Autism is the most common condition in a group of developmental disorders known as the autism spectrum disorders (ASDs). Other ASDs include Asperger syndrome, Rett syndrome, Childhood Disintegrative Disorder, and Pervasive Developmental Disorder-not otherwise specified (usually referred to as PDD-NOS). It is estimated that three to six children out of every 1,000 will have autism. Males are four times more likely to have autism than females.

Autism is characterized by impaired social interaction, problems with verbal and nonverbal communication, and unusual, repetitive, or severely limited activities and interests. When teaching students with Autism it is good to be aware of the student’s sensory triggers. Often, students with ASDs experience sensory processing dysfunction.

**Common Characteristics**

Hard to function within the school environment and they may struggle with expressive and receptive language.
Display unusual gross and fine motor behaviors

Examples Include:

- Striking
- Hand flapping
- Pacing
- Spinning
- Running in circles
- Twirling a string
- Tearing paper
- Drumming
- Flipping light switches
- A slight shaking of the hand in front of the face

Atypical ways of students with autism communicate

- Have temper tantrums
- Grabbing teachers hand (taking teacher where he/she wants to be)
- Self and other aggression.

Teaching Tips

- Use visuals (picture schedules, video clips)
- Avoid long strings of verbal instruction
- Encourage development of child’s special talents
- Use child’s fixations to motivate school work
- Use concrete, visual methods to teach number concepts
- Protect child from sounds that hurt his/her ears
- Use weighted vests to calm nervous system
- Interact with child while he/she is swinging or rolled in a mat
- Don’t ask child to look and listen at the same time
- Teach with tactile learning materials
- Use printed words and pictures on a flashcard
- Use a consistent beginning and ending to an activity
**Spina Bifida**

Some tips for an individual with Spina Bifida could be adapting activities that can be played with the use of crutches, braces, or wheelchairs. The use of a helmet may also be necessary in case the student has a shunt. This will help to prevent further head injuries. This may also be done with the use of a soft foam ball or balloons. Students with Spina Bifida are often allergic to latex. Individuals with Spina Bifida are frequently make great athletes. It is important to modify and develop an assortment of games and activities for these individuals. These individuals can become very mobile and skilled in wheelchairs, so introducing these individuals to games such as tennis, basketball, swimming, and even racquetball can be great for this skill development and also social interaction in the community.

**Cerebral Palsy**

Some suggestions for an individual with Cerebral Palsy (CP) are to do more stretching exercises. ((Make sure that you consult the student’s PT (physical therapist) before you do the stretches.) The condition causes their muscles to have tendency to become very tight so a slow stretch can be helpful to reduce the tone. You can also work on body positioning, and strength exercises to help the student gain enough strength to support their own body weight.

Some adaptations for students with CP:

- Student in wheel chair- Can hold one handle on the parachute with the edge of his/her chair.
- Child with Quadriplegic spastic- If in dance session child can hold bells or some type of instrument.
- Child with Ataxia- Teacher can hold student in lap if doing a circle game.
- Aquatics- Vital part of curriculum for students with CP. The buoyancy of the water frees the child from the pull of gravity, allows for greater range of motion.

Some exercises for students with CP:

- Gravity Exercises- Exercise the involves lifting the weight of the body or body part.
- Gait Training- To teach or re-teach walking patterns.
- Body Mechanics- Lifting techniques to obtain maximum use of the large muscle groups of the body.
**Visual Impairments**

Individuals with a visual impairment may be more successful in a well-lit room. It may also help to keep objects in a routine place so they can become accustomed to knowing where they are. The use of audio devices in equipment and different textured equipment may also be very beneficial. Using of guidelines, and brightly colored boundaries can also help these individuals to be more successful in the physical education setting. Some safety concerns for these individuals would be to let them wear protective goggles and keep the floor clear of any tripping hazards.

Also with students that have a visual impairment they might also be more successful with a certain color. Some students who can partially see maybe be able to see a certain color better than another and you should use this type of color for the activity that is going on to make them more successful.

**Hearing Impairments**

Individuals with a hearing impairment may need to use a guide in class. It is also important to keep their learning environment free of excessive noise to include music while giving instruction. They may need a shorter more direct instruction when it comes to activities. Visual indicators are also more important for these students to understand the beginning and end of game play. Students with a hearing impairment also tend to perform better in small groups and understand better if the instructor speaks clearly.

Here are some behavioral characteristics of a student that is hearing impaired might show:

- Lack of attention
- imitates others
- responds to noises instead of words
- lack of speech development
- turns or cocks head
- acts out
- preoccupied with things and not people
- works best in small groups
- uses gestures
- reluctant to participate orally
- monotone quality in voice
• difficulty in following directions

These are just a few that a student might show in the classroom that could be noticed very easily.

Some motor characteristics of an individual with a hearing impaired might be: The impairment of the semicircular canals, vestibule of the inner ear, and/or vestibular portion of the eighth cranial nerve which has a negative effect on balance. Congenitally deaf/hearing impaired individuals have poorer balance than those with acquired deafness. This means that if an individual was born with a hearing impairment that their balance is poorer than an individual that has acquired the deafness through some sort of means like: Excessive exposure to loud noise which can damage the tiny hairs in the cochlea and lead to hearing loss. This condition is known as noise-induced hearing loss. This individual was able to learn how to walk and balance before the hearing loss.

**Muscular Dystrophy**

Individuals with Muscular Dystrophy may tire quickly, are almost always in a wheelchair. Lifetime activities these individuals can perform in their chair can be beneficial to them. Activities that involve breathing practices can also be beneficial for these students. Remember these students will be losing strength increasingly as they grow older.

**Transition**

In 1990, Congress passed the Individuals with Disabilities Education Act (IDEA), in order to make significant alterations to the Education of All Handicapped Act of 1975. For example, IDEA redefined the purpose and process of the Individualized Education Plan (IEP). One significant change to the IEP was a newly required transition statement, which was to be developed no later than a student's 16th birthday.

Transition is the successful movement from a student in school to a productive, quality, and meaningful adult life. Effective transition is based on the individuals' needs, and consists of coordinated activities in the following areas: Education, Career, Community, Communication, Social Interaction, Recreation and Leisure. (Not every transition program will be the same; it is dependent upon the individual. Transition, as defined by IDEA 1997, is “...a coordinated set of activities for a student, designed within an outcome-oriented process which promotes movement form school to post-
school activities, including post secondary education, vocational training, integrated employment (including supported employment), continuing and adult education, adult services, independent living, or community participation. (IDEA, 1997, Section 602.30) Furthermore, according to federal legislation, students 14 years and older are required to attain planning methods provided by the Adapted Physical Education Transition Model. All methods provide greater opportunity for students to transition into a more productive, and meaningful adult life.

Given their ever-expanding role, adapted physical educators must pay attention to this issue. As adapted physical educators it is important to provide students with experiences and resources during their time in an educational setting so the students have a better chance of staying physically active during and after the transition period.

Expanding and exploring students ideas and knowledge about physical activity is essential for success outside of the education setting.

Transition in adapted physical education helps students with disabilities move towards community involvement through healthy and independent lifestyles. The first crucial element in a successful transition is for the student’s IEP team to have a well developed and defined vision based on the students strengths, needs, and preferences.

It is essential for transition to be part of the school’s curriculum. Without transitioning a student into real life situations he or she may have a difficult time taking part in some of the lifetime activities they learned throughout their time in school and thus have a more sedentary lifestyle leading to more health risks and issues. By putting transitioning into a schools curriculum it will increase the overall learning experience for students in adapted physical education. The curriculum for APE in the school setting should focus on developing the students' fitness, motor skills, sport skills, social-skill training, community adjustment, and take part in a recreation and leisure survey. During the transition period more focus should be put on fitness, sport, disability sport, friendships, community participation, and recreation and leisure (Modell & Megginson, 2001). If more focus is put in the curriculum during the years students with disabilities are in the school, the smoother the transition process with go.

Transitioning prepares students for life outside of school. Participation and experiences in leisure activities provides opportunities for skill and competency development needed to successfully participate in a variety of activities upon leaving
school. In addition, when engaged in recreation and leisure activities, opportunities of success in communities increases for individuals with disabilities. The formation of a reverse mainstreaming physical education program will also help in the transition of the student with a disability. This program can benefit both the student with a disability and the peer mentor as together they will attempt to achieve better physical fitness skills, improved social skills, and higher standards of social and personal responsibilities.

Transition related to the adapted physical education curricular area focuses on most of the previously listed areas. Students will not only learn how to do an activity, but the progressive skills it takes to have the opportunity to complete the activity in a community based setting. Such skills can include the following:

- Finding the information about the activity
- Finding time of operation for places
- Figuring out transportation
- Know how to perform the activity independently
- Finding a way to fit the activity into the individual's weekly schedule.

These all include social interaction and various means of communication. Students will need to be taught many skills beyond the normal adapted physical education curriculum in order to achieve lifetime physical activity.

Some ideas for the student to find what interests him/her to help with transition 4–5 years prior to graduation:

- Take a community education class.
- Attend events to learn spectator or audience member skills.
- Learn how to plan recreation and leisure activities (where, when, cost, transportation).
- Establish exercise routines.
- Join a club or an organization in your community.

3 years prior to graduation:

- Explore new ways to use your free time.
- Identify supports needed to participate in activities of interest.

2 years prior to graduation:

- Try additional recreation and leisure activities.

1 year prior to graduation:
• Continue to take part in activities of interest.

1–2 years after graduation:
• Join and participate in adult recreation activities.

The process of transition can work very well with students, however this process does not happen overnight. Students will need the appropriate amount of time to learn all of the necessary skills. Transition services become a part of a student's education at the age of 14 or 16 depending on the school district and continue until the student is 22 years of age. At this time, an Individual Transition Plan is developed with goals and objectives written in person first language, specific to the individual student to ensure their abilities to function in the community when they graduate. The members involved in developing the Individual Transition Plan should be the IEP team members. The IEP team members should have the following questions in mind:

1. What interests or hobbies do the students and his or her family enjoy doing?
2. What knowledge and competencies does the student need in order to move from school-based to community based living in their particular community.
3. What knowledge and prior experience does the student already have?
4. What knowledge and experience will the student need to be successful?
5. What will the student's living situation be like after high school?
6. Will the student be employed in the area? Will working interfere with recreation/leisure time? If so, how will the student stay active?

As is true in most aspects of adapted physical education, the skills practiced during the transition process tend to be most successful when the students have an opportunity to contribute to the decision making process. Also, providing sufficient amounts of repeated trials will drastically improve the students' level of success.

**Example of a Transition Plan**

Making a Leisure Transition Plan (LTP) is a great way to help and aid an individual with a disability during the transition process. The purpose of the LTP is to develop the student's ability to select and participate in activities in the community during his or her free time. Specialists from the APE field must be aware of physical recreation opportunities available in the community; determine the student's activity interests,
preferences, and needs: and then include these activities in the student's physical education curricula and LTP. Here is an example of a LTP:

**Transition Goal #1**
Cindy will increase her awareness and use of public transportation.

**Transition Activities**
- Cindy will meet with a representative from Valley Transit to discuss bus routes.
- Cindy will experience getting on and off a bus with the use of a lift, while in her wheelchair.
- Cindy will verbally demonstrate her understanding of the proper way to anchor a wheelchair inside the bus.
- Cindy will map out a schedule to and from a destination (field trip), identifying bus routes, departure, and arrival times.
- Cindy will use Valley Transit as a means of transportation for a field trip.
- Cindy will meet with a representative of Medi-Vans to receive information on rules and regulations, cost, and how to schedule trips.
- Cindy will experience getting in and out of a Medi-Van while in her wheelchair.
- Cindy will receive information to share with her parents on the procedure for obtaining an ADA card (use with Medi-Van).
- Cindy will call to schedule transportation for a field trip using Medi-Vans.
- Cindy will travel on a field trip using Medi-Vans for transportation.
- Cindy will meet with a representative from Valley Cabs to discuss how to schedule trips.
- Cindy will schedule transportation for a field trip with Valley Cabs.
- Cindy will use Valley Cab as a means of transportation for a field trip.

**Transition Goal #2**
Cindy will increase her awareness of federal legislation (ADA and IDEA).

**Transition Activities**
• Cindy will do searches on the internet to locate five sites that give information on federal (disability) legislation, then print the first page of each to put in her transition portfolio for future reference.
• Cindy will locate "ADA Accessibility Guidelines For Buildings and Facilities" on the internet, then print the Table of Contents to put in transition portfolio for future reference.
• Cindy will locate three accessibility guidelines in ADA, record minimum requirements/measurements, and then check to see if her school building is in compliance.
• Cindy will locate three advocacy sites (for persons with disabilities) on the internet, print a document from each relating to federal legislation, and study and dictate a summary of each on audio tape. Cindy will share this audiotape with her parents.

**Transition Goal #3**

Cindy will plan and take field trips into the community to visit sites that offer physical activities that she has indicated are of interest to her. She will observe or participate in these activities while on the field trip. Cindy will evaluate each experience.

**Transition Activities**

• Cindy will identify locations and activities she would like to explore in the community.

• Cindy will discuss with the APE specialist and/or community resource person what preparations and arrangements need to be made prior to going on the field trip (i.e. time schedules, transportation, clothing, equipment, accommodations/adaptations, and money).

• Cindy will make arrangements for the field trip with the APE specialist and/or community resource personnel.

• Cindy will fill out a critique form after each community experience. Critique will address accessibility, effectiveness of accommodations/adaptations, atmosphere of community setting (i.e.
friendly, helpful), and personal reactions on enjoyment and possible future participation.

Many of the activities done in adapted physical education are also done in competition. As part of transitioning to life after school an adapted physical education teacher can let the students know about athletic competitions and associations for the activities done in adapted physical education. Some organizations include: the National Beep Baseball Association, the National Disability Sports Alliance (NDSA), Special Olympics International (SOI), the American Wheelchair Bowling Association (AWBA), the United States Association of Blind Athletes (USABA), and the Disabled Sports USA (DSUSA). These and other organizations like them can also introduce the students to new activities such as beep baseball, which is a baseball game played by individuals with visual impairments and others using blindfolds. As the name suggests they use a ball that beeps as well as bases that beep. These organizations and competitions can help students get interested in an activity that will keep them active for a lifetime.

**People Involved in Individual Transition Plan**

These people may be involved *Direct Service Providers*

- Special Educators
- Hospital/Home bound Instructors
- Instructors in Institutions and other settings
- Adapted Physical Educators
- General Physical Educators
- Vision, Orientation and Mobility Specialists

*Related Service Providers*

- Audiologists
- Counseling Services
- Medical Diagnostic Service Personnel
- Occupational, Speech, Recreation and Physical Therapists
- Parent Counselors and Trainers
- Psychologists
- Rehabilitation Counselors
- Assistive Technology Service Personnel
- School Health Service Personnel
• Social Workers
• Transportation Specialists
• Transition Service Personnel.

Advocacy for Transition

With respect to transition, adapted physical educators should first and foremost advocate that their own involvement in the post-school transition process be indicated on their students' Individualized Education Program (IEP). Some other areas in transition which should be brought to the attention of administrators and community officials are implementing ways in which physical activity sites can become more accessible, advocating that students with disabilities be able to participate in the entire continuum of sports programs (integrate and segregated) sponsored by the school and community; and helping parents rally for appropriate community recreation and sport opportunities for their children with disabilities.

Barriers to Transition

• Facilities:

• Transportation

Transportation can become a problem during transition. Many students who have a disability cannot drive a car, so it is important to teach students, during their educational process, other means of transportation. This may mean teaching students routines on how to use the city bus system, or finding a group to car pool with, or even finding an older adult who may not mind picking up a student when they are going to the local YMCA.

• Money

Many fitness clubs are increasing prices for membership and with increasing gas prices it may be difficult for students with disabilities to afford a membership somewhere and have the means of getting there if they are not within walking distance.

• Planning

For many students with disabilities planning a trip to the YMCA or any facility will be difficult task. In school their schedule was planned for them and they didn't have to worry about how and when things were going to happen. As a result, planning is one of the biggest barriers to transition. Students with disabilities may need to be taught what to wear, what
transportation to use, how to set up plans with friends, and how to figure out how much money they may need.

- **Lack of programs**
  There may be a lack of programs in a community, who have the knowledge and ability to assist individuals with disabilities. This may mean individuals with disabilities may have to participate in programs with individuals without disabilities. This may help with the socialization aspect of development, but may limit their practice and participation time. The individual may also be intimidated by the other individuals, which may push them away from that activity or program.

- **Lack of Support i.e: school, organizations, public, families...**
- **Staff/ employee knowledge i.e: at local businesses, teacher assistants**
- **Strange “New” places**
- **Lack of Motivation**
  Students with a disability have received motivation by teachers, paraprofessionals, and classmates during their education process. When their education process is done these individuals may not be there to motivate and push them to become physically active. Finding out activities and sports during the education process which the student enjoys participating in can help intrinsically motivate these students when they are in the transition period.

- **Limited Community Recreation Activities**

  **Overcoming Barriers and Improving a Transition Program**

  Many times teachers don't know how to help students transition from high school. There are many barriers students face once out of high school. However, there are things teachers, parents, and students can do to ensure their ability to function in the community when leaving the school setting. A big barrier is the knowledge of parents. A good way to help them is to hold parent workshops. Not only are they able to talk with other parents, but also learn about different ways they can help their child transition into the community. Another thing that can be helpful is to have parent mentors. Parents who have already had their child graduate can mentor a parent whose child hasn't graduated yet. Another mentoring option is to have students who have graduated mentor a student who hasn't graduated yet. This gives them a companion and a responsibility and a feeling of importance in another child's life.
Activity newsletters are also wonderful tools for parents and students to receive information about different activities and programs that go on in the community for them to get involved in.

**Use of Technology**

With the development of new and improved technology with physical education and especially adapted physical education it is important for the APE teacher to know and understand different ways to implement technology for a successful transitional period for his or her students. APE teachers can develop an updated website regarding a fitness workout plan, in which students, who may need to stay at home half of the day, can download and follow at home with a sibling or parents. Video files can also be used to demonstrate proper technique, and appropriate music for aerobic activities could be downloaded as well. With technology growing and becoming better each day, APE teachers need to continue to grow as professionals and try to use this to benefit and enhance their students' physical development.

Adapted physical education teachers are not only required to teach students with disabilities how to stay and become physically active, but also how, when and where. APE teachers are responsible for recognizing and teaching students with disabilities how to overcome the barriers for transition. In order to achieve this APE teachers need to concentrate on activities in the community that promote a physically active lifestyle while enhancing the health and wellness of students with disabilities. Upon graduation, students with disabilities should know how to plan their activity, perform their activity, and become personally responsible for participating in recreational activities on a regular basis.

**University Partnerships for Transition:**

- Creates Friendships.
- Introduce students to transportation system.
- Provide students with an opportunity to use facilities not available at high school level.
- Provides education for both university students and students with disabilities.
- Great stepping stone into the transition process

**Sports science**
**Sport science** is a discipline that studies the application of scientific principles and techniques with the aim of improving sporting performance. **Human movement** is a related scientific discipline that studies human movement in all contexts including that of sport.

The study of sports science traditionally incorporates areas of physiology, psychology, motor control and biomechanics but also includes other topics such as nutrition and diet, sports technology, anthropometry kinanthropometry and performance analysis.

Sports scientists and performance consultants are growing in demand and employment numbers, with the ever-increasing focus within the sporting world on achieving the best results possible. Through the study of science and sport, researchers have developed a greater understanding on how the human body reacts to exercise, training, different environments and many other stimuli.

== Origins of exercise physiology ==

The origins of exercise physiology are traced back to the early Greek physicians. Such as the noted ancient Greek physician Galen (131-201) who wrote 87 detailed essays about improving health (proper nutrition), aerobic fitness, and strengthening muscles. Assyrian Hunayn ibn Ishaq translated Galen’s work, along with that of Hippocrates, into Arabic which lead to the spread of Greek physiology throughout the Middle East and Europe. Between 776 B.C to 393 A.D, the ancient Greek physicians planned the training regimens and diets of the Olympic competitors, which developed many principles still used today.

New ideas upon the working and functioning of the human body emerged during the renaissance as anatomists and physicians challenged the previously known theories. These spread with the implementation of the printed word, the result of Gutenberg's printing press in the 15th century. Allied with this was a large increase in academia in general, universities were forming all around the world. Importantly these new scholars went beyond the simplistic notions of the early Greek physicians, and shed light upon the complexities of the circulatory, and digestive systems. Furthermore by the middle of the 19th century early medical schools (such as the Harvard Medical School, formed 1782) began appearing in the United States, whose graduates went on to assume positions of importance in academia and allied medical research. Mickey Capeling Medical journal publications in the United States increased tremendously during this period. In conjunction the developments in America were also continuing...
across Europe. In 1898, three articles on physical activity appeared in the first volume of the *American Journal of Physiology*. Other articles and reviews subsequently appeared in prestigious journals. The German applied physiology publication, *Internationale Zeitschrift fur Physiologie einschliesslich Arbeitphysiologie* (1929–1940; now known as the European Journal of Applied Physiology and Occupational Physiology), became a significant journal in the field of research.

From this period to the modern day, a number of key figures have moulded the field into what it is today. Below is a selection of just a few of these:

**Noted Exercise Physiologists**

Austin Flint, Jr., (1836–1915) One of the first American pioneer physicians, studied physiological responses to exercise in his influential medical textbooks.

Edward Hitchcock, Jr., (1828–1911) Amherst College Professor of hygiene and physical education, devoted his academic career to the scientific study of physical exercise, training and the body. Coauthored 1860 text on exercise physiology.

Mockey cupperling George Wells Fitz, M.D. (1860–1934) Created the first departmental major in Anatomy, Physiology, and Physical Training at Harvard University in 1891.

August Krogh (1874–1949) Won the 1920 Nobel prize in physiology for discovering the mechanism that controlled capillary blood flow in resting or active muscle.

Mickey "crackpipe" capeling Per-Olof Astrand (1922-) Professor at the Department of physiology, Karolinska Institute, Stockholm. Wrote seminal paper which evaluated the physical working capacity of men and women aged 4–33 years. He was propelled to the forefront of experimental exercise physiology and achieved worldwide fame.

1. Result determines that mean score of Interuniversity Cricket players Ss on outgoing (21.13) is comparatively larger than the mean score of Intercollegiate Cricket players Ss (17.50) on outgoing. F value shows significant (F=85.435 (1,396) P < 0.01) difference between Interuniversity Cricket players Ss and Intercollegiate Cricket players Ss on Outgoing. Mean score of Male Cricket players Ss on outgoing (20.31) is comparatively larger than the mean score of Female Cricket
players' Ss (18.31) on outgoing. F value shows significant (F=25.935 (1,396) P < 0.01) difference between Male Cricket players' Ss and Female Cricket players' Ss on outgoing, on the basis of result it can be concluded that the hypothesis no. 1. Interuniversity Cricket players are significantly more outgoing than the Intercollegiate Cricket players has been proved.

2. Result determines that mean score of Interuniversity Cricket players' Ss on intelligent (14.54) is comparatively larger than the mean score of Intercollegiate Cricket players' Ss (11.75) on intelligent. F value shows significant (F=133.825 (1,396) P < 0.01) difference between Interuniversity Cricket players' Ss and Intercollegiate Cricket players' Ss on intelligent. Mean score of Male Cricket players' Ss on intelligent (13.92) is comparatively larger than the mean score of Female Cricket players' Ss (12.36) on intelligent. F value shows significant (F=41.839 (1,396) P < 0.01) difference between Male Cricket players' Ss and Female Cricket players' Ss on intelligent, on the basis of result it can be concluded that the hypothesis no. 2. Interuniversity Cricket players are significantly more intelligent than the Intercollegiate Cricket players.

3. Result determines that mean score of Interuniversity Cricket players' Ss on stableness (30.77) is comparatively larger than the mean score of Intercollegiate Cricket players' Ss (27.23) on stableness. F value shows significant (F=129.129 (1,396) P < 0.01) difference between Interuniversity Cricket players' Ss and Intercollegiate Cricket players' Ss on stableness. Mean score of Male Cricket players' Ss on stableness (30.02) is comparatively larger than the mean score of Female Cricket players' Ss (27.98) on stableness. F value shows significant (F=42.882 (1,396) P < 0.01) difference between Male Cricket players' Ss and Female Cricket players' Ss on stableness, on the basis of result it can be
concluded that the hypothesis no. 3. Intercollegiate Cricket players are significantly less stable than the Interuniversity Cricket players.

4. Result determines that mean score of Interuniversity Cricket players Ss on Assertiveness (22.30) is comparatively larger than the mean score of Intercollegiate Cricket players Ss (19.27) on Assertiveness. F value shows significant \((F=71.616 (1,396) P < 0.01)\) difference between Interuniversity Cricket players Ss and Intercollegiate Cricket players Ss on Assertiveness. Mean score of Male Cricket players Ss on Assertiveness (21.78) is comparatively larger than the mean score of Female Cricket players Ss (19.79) on Assertiveness. F value shows significant \((F=30.891 (1,396) P < 0.01)\) difference between Male Cricket players Ss and Female Cricket players Ss on Assertiveness, on the basis of result it can be concluded that the hypothesis no. 4. Interuniversity Cricket players are significantly more Assertive than the Intercollegiate Cricket players.

5. Result determines that mean score of Interuniversity Cricket players Ss on Conscientiousness (25.46) is comparatively larger than the mean score of Intercollegiate Cricket players Ss (20.98) on Conscientiousness. F value shows significant \((F=172.321 (1,396) P < 0.01)\) difference between Interuniversity Cricket players Ss and Intercollegiate Cricket players Ss on Conscientiousness. Mean score of Male Cricket players Ss on Conscientiousness (24.59) is comparatively larger than the mean score of Female Cricket players Ss (21.85) on Conscientiousness. F value shows significant \((F=64.081 (1,396) P < 0.01)\) difference between Male Cricket players Ss and Female Cricket players Ss on Conscientiousness, on the basis of result it can be concluded that the hypothesis no. 5. Interuniversity Cricket players are
significantly more Conscientious than the Intercollegiate Cricket players.

6. Result determines that mean score of Interuniversity Cricket players Ss on Superego strength (25.34) is comparatively larger than the mean score of Intercollegiate Cricket players Ss (20.80) on Superego strength. F value shows significant (F=172.039 (1,396) P < 0.01) difference between Interuniversity Cricket players Ss and Intercollegiate Cricket players Ss on Superego strength. Mean score of Male Cricket players Ss on Superego strength (24.43) is comparatively larger than the mean score of Female Cricket players Ss (21.71) on Superego strength. F value shows significant (F=62.167 (1,396) P < 0.01) difference between Male Cricket players Ss and Female Cricket players Ss on Superego strength, on the basis of result it can be concluded that the hypothesis no. 6. Interuniversity Cricket players are significantly more Superego strength than the Intercollegiate Cricket players.

7. Result determines that mean score of Interuniversity Cricket players Ss on Shyness (25.04) is comparatively larger than the mean score of Intercollegiate Cricket players Ss (20.65) on Shyness. F value shows significant (F=155.464 (1,396) P < 0.01) difference between Interuniversity Cricket players Ss and Intercollegiate Cricket players Ss on Shyness. Mean score of Male Cricket players Ss on Shyness (24.18) is comparatively larger than the mean score of Female Cricket players Ss (21.51) on Shyness. F value shows significant (F=57.423 (1,396) P < 0.01) difference between Male Cricket players Ss and Female Cricket players Ss on Shyness, on the basis of result it can be concluded that the hypothesis no. 7. Interuniversity Cricket players are significantly more Shy than the Intercollegiate Cricket players.
8. Result determines that mean score of Interuniversity Cricket players Ss on Tough minded (21.69) is comparatively larger than the mean score of Intercollegiate Cricket players Ss (16.88) on Tough minded. F value shows significant (F=158.055 (1,396) P < 0.01) difference between Interuniversity Cricket players Ss and Intercollegiate Cricket players Ss on Tough minded. Mean score of Male Cricket players Ss on Tough minded (20.69) is comparatively larger than the mean score of Female Cricket players Ss (17.88) on Tough minded. F value shows significant (F=53.863 (1,396) P < 0.01) difference between Male Cricket players Ss and Female Cricket players Ss on Tough minded, on the basis of result it can be concluded that the hypothesis no. 8. Interuniversity Cricket players are significantly more Tough minded than the Intercollegiate Cricket players.

9. Result determines that mean score of Interuniversity Cricket players Ss on Suspicious (13.29) is comparatively larger than the mean score of Intercollegiate Cricket players Ss (11.17) on Suspicious. F value shows significant (F=119.980 (1,396) P < 0.01) difference between Interuniversity Cricket players Ss and Intercollegiate Cricket players Ss on Suspicious. Mean score of Male Cricket players Ss on Suspicious (12.85) is comparatively larger than the mean score of Female Cricket players Ss (11.61) on Suspicious. F value shows significant (F=41.047 (1,396) P < 0.01) difference between Male Cricket players Ss and Female Cricket players Ss on Suspicious, on the basis of result it can be concluded that the hypothesis no. 9. Interuniversity Cricket players are significantly more Suspicious than the Intercollegiate Cricket players.

10. Result determines that mean score of Intercollegiate Cricket players Ss on Imaginative (21.74) is comparatively larger than the mean
score of Interuniversity Cricket players Ss (17.36) on Imaginative. F value shows significant (F=146.890 (1,396) P < 0.01) difference between Intercollegiate Cricket players Ss and Interuniversity Cricket players Ss on Imaginative. Mean score of Female Cricket players Ss on Imaginative (20.82) is comparatively larger than the mean score of Male Cricket players Ss (18.29) on Imaginative. F value shows significant (F=49.010 (1,396) P < 0.01) difference between Female Cricket players Ss and Male Cricket players Ss on Imaginative, on the basis of result it can be concluded that the hypothesis no. 10. Intercollegiate Cricket players are significantly more Imaginative than the Interuniversity Cricket players.

11. Result determines that mean score of Intercollegiate Cricket players Ss on Forthright (21.27) is comparatively larger than the mean score of Interuniversity Cricket players Ss (15.64) on Forthright. F value shows significant (F=209.668 (1,396) P < 0.01) difference between Intercollegiate Cricket players Ss and Interuniversity Cricket players Ss on Forthright. Mean score of Female Cricket players Ss on Forthright (20.13) is comparatively larger than the mean score of Male Cricket players Ss (16.78) on Forthright. F value shows significant (F=74.235 (1,396) P < 0.01) difference between Female Cricket players Ss and Male Cricket players Ss on Forthright, on the basis of result it can be concluded that the hypothesis no. 11. Intercollegiate Cricket players are significantly more Forthright than the Interuniversity Cricket players.

12. determines that mean score of Interuniversity Cricket players Ss on Placid (22.39) is comparatively larger than the mean score of Intercollegiate Cricket players Ss (16.45) on Placid. F value shows significant (F=222.732 (1,396) P < 0.01) difference between Interuniversity Cricket players Ss and Intercollegiate Cricket players Ss on Placid. Mean score of Male Cricket players Ss on Placid (21.12) is
comparatively larger than the mean score of Female Cricket players Ss (17.72) on Placid. F value shows significant (F=72.974 (1,396) P < 0.01) difference between Male Cricket players Ss and Female Cricket players Ss on Placid, on the basis of result it can be concluded that the hypothesis no. 12. Interuniversity Cricket players are significantly more Placid than the Intercollegiate Cricket players.

13. Result determines that mean score of Interuniversity Cricket players Ss on Experimenting (22.39) is comparatively larger than the mean score of Intercollegiate Cricket players Ss (16.45) on Experimenting. F value shows significant (F=222.732 (1,396) P < 0.01) difference between Interuniversity Cricket players Ss and Intercollegiate Cricket players Ss on Experimenting. Mean score of Male Cricket players Ss on Experimenting (21.12) is comparatively larger than the mean score of Female Cricket players Ss (17.72) on Experimenting. F value shows significant (F=72.974 (1,396) P < 0.01) difference between Male Cricket players Ss and Female Cricket players Ss on Experimenting, on the basis of result it can be concluded that the hypothesis no. 13. Interuniversity Cricket players are significantly more Experimenting than the Intercollegiate Cricket players.

14. Result determines that mean score of Interuniversity Cricket players Ss on Self-sufficient (22.39) is comparatively larger than the mean score of Intercollegiate Cricket players Ss (16.45) on Self-sufficient. F value shows significant (F=222.732 (1,396) P < 0.01) difference between Interuniversity Cricket players Ss and Intercollegiate Cricket players Ss on Self-sufficient. Mean score of Male Cricket players Ss on Self-sufficient (21.12) is comparatively larger than the mean score of Female Cricket players Ss (17.72) on Self-sufficient. F value shows significant (F=72.974 (1,396) P < 0.01) difference between
Male Cricket players Ss and Female Cricket players Ss on Self-sufficient, on the basis of result it can be concluded that the hypothesis no. 14. Interuniversity Cricket players are significantly more Self-sufficient than the Intercollegiate Cricket players.

15. Result determines that mean score of Interuniversity Cricket players Ss on Controlled (21.41) is comparatively larger than the mean score of Intercollegiate Cricket players Ss (17.78) on Controlled. F value shows significant (F=145.548 (1,396) P < 0.01) difference between Interuniversity Cricket players Ss and Intercollegiate Cricket players Ss on Controlled. Mean score of Male Cricket players Ss on Controlled (20.61) is comparatively larger than the mean score of Female Cricket players Ss (18.58) on Controlled. F value shows significant (F=45.419 (1,396) P < 0.01) difference between Male Cricket players Ss and Female Cricket players Ss on Controlled, on the basis of result it can be concluded that the hypothesis no. 15. Interuniversity Cricket players are significantly more Controlled than the Intercollegiate Cricket players.

16. Result determines that mean score of Interuniversity Cricket players Ss on Relaxed (23.19) is comparatively larger than the mean score of Intercollegiate Cricket players Ss (18.83) on Relaxed. F value shows significant (F=151.561 (1,396) P < 0.01) difference between Interuniversity Cricket players Ss and Intercollegiate Cricket players Ss on Relaxed. Mean score of Male Cricket players Ss on Relaxed (22.36) is comparatively larger than the mean score of Female Cricket players Ss (19.66) on Relaxed. F value shows significant (F=58.040 (1,396) P < 0.01) difference between Male Cricket players Ss and Female Cricket players Ss on Relaxed, on the basis of result it can be concluded that the hypothesis no. 16. Interuniversity Cricket players are significantly more Relaxed than the Intercollegiate Cricket players.