

# [Psk and free-throws your knee, hip, ankle](https://assignbuster.com/psk-and-free-throws-your-knee-hip-ankle/)

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PSK 4U1 Culminating Performance Task– 2018Exercise Physiology: EnergySystems Used: For basketball you useall energy systems, for example: ATP-PC system provides short bursts of immediateenergy, this usually lasts only 10 to 30 seconds and happens during quicksprints up and down the court, jump-shots, rebounding, and intense defense.

This system requires at least 3minutes of rest to recover due to the absence of oxygen during this energysystem. To train your ATP-PCsystem you would need to do very intense but short actions such as liftingheavy weights or sprinting 50-80 meters with a 3-minute break in between sets. The next energy systemused is Glycolysis, this is used primarily between plays that last anywherefrom 30 seconds up to a minute.

Examples where this is used is in fulldefensive sets that start at full court, multiple quick changes of possession, and full offensive sets that use inbounding plays and lots of screens. Therecovery of this system takes 60 seconds to 4 minutes for a full recovery. To train your Glycolysissystem you should do moderate intensity exercises that would last from 30seconds to a minute with a 2-minute break between sets, for example you can dostandard strength and conditioning training for this system.  The last energy systemused but probably the most important for basketball is the Aerobic energysystem. This system is essential for the continuous play that is required foran entire basketball game. This system is used for long endurance activitiessuch as a long grueling basketball game, the Aerobic system also assists theother systems in recovering sooner. This system can last anywhere from a coupleminutes to hours depending on the fitness level of the athlete, the rest timefor this system is around 10 minutes long.

To train your Aerobicenergy system you should do long moderate to low intensity workouts such ascross country, 800m, or long interval training. MuscleContractions Required for Sport: Certain actions inbasketball require the use of concentric and eccentric muscle contractions to performthe given task, some of these tasks can include: chest passes, free-throws, rebounding/dunking, and 3-point shots. In chest passes, 3-point shots, and free-throwsyour knee, hip, ankle and elbow extensors as well as shoulder and wrist flexorsshorten to perform the action which results in a concentric contraction. On theother hand, during a fast-break dunk or while going up for a rebound yourquadriceps lengthen as you get ready to explode up with full force putting themin an eccentric contraction, your hamstrings however are doing the opposite. But as you jump and are in the air your hamstrings lengthen making them do aneccentric contraction. VO2Demands in Basketball: VO2 max is themeasurement of the maximum amount of oxygen a person can use during intense, ormaximal exercise. In basketball you have many short plays that require shortmoments of intense physical demands and your VO2 max dictates how much oxygenyou can use during that event. Since this is an important factor in basketballand can also show how efficient you are at utilizing the oxygen in your body itmakes sense that you would want to try and improve your VO2 max.

AverageVO2 max values for female and male basketball players have been reported in therange of 44. 0–54. 0 and 50–60 mL/kg/min, respectively. (Taylor, J. (2004). Atactical metabolic training model for collegiate basketball. Strength Cond. J.

26: 22–29.)Having your VO2 max inthese levels will optimize your playing ability and be the difference in splitsecond 50/50 plays that can win or lose a game. Anatomy in Basketball: MainMuscles Used in Basketball: Basketball is a dynamicsport that simultaneously activates muscles throughout your body to coordinatecomplex, multi-joint movements with precision (Miguel Cavazos, Muscles UsedDuring Basketball). In basketball your hamstrings are used in every play, theyform at the back of your thighs and help your knee bend every time you liftyour leg to run across the court or bend down to get ready to take a shot. Tostrengthen your quadriceps, I would recommend doing heavy weights with 5 setsbut low reps (around 3-6) as this will start of training the size and power ofyour quads. Some exercises that will improve the strength and endurance of yourquadriceps are: squats, leg press, and leg extensions. Your core muscles arevital in basketball as the can help with your stability, shock absorption, andadjusting your body in midair during layups. Your core is made up of manymuscles such as the rectus abdominis, external obliques, and erector spinaejust to name a few.

These muscles help you stay upright against gravity, rotateand bend your torso, and help with overall stability. To strengthen your core, I would use exercises such as side crunches, Russian twists, and bicyclecrunches to target you obliques, Sit-ups, exercise ball knee tucks, and planksfor your rectus abdominis, and Roman chair hyperextensions, superman backextensions, and deadlifts for your erector spinae. For your obliques and abs doas many reps as possible for a minute with a 1-minute rest in between sets, forthe erector spinae do 20 reps with 1-minute rest for your Roman chair andsuperman exercises and 12 reps of a moderate weight with a 1-minute restbetween sets for deadlifts.     Biomechanics: ScientificAdvances in Equipment: Basketball is a simplesport with a court and two hoops however, this is what brought its attention tothe masses. Even though basketball is simple there has been many advancementsin its technology throughout the years since its conception. In basketball’s infancy playersonly wore canvas sneakers with rubber soles called “ Chuck Taylor All-Stars”, these shoes offered poor shock absorption, and ankle support. Since playersdidn’t change their shoes as often as today’s NBA players their shoes got wornout and deformed putting added stress on the bones and joints of the athletes, basketball shoes stayed like this until the 80’s.

Now in the present-day NBA thereis a plethora of different shoes an athlete can choose from, researchersfigured out how to give players small advantages over others solely based onthe type of shoe they could be wearing. If you look at athletes such as KyrieIrving or Stephen Curry you notice that their shoes have a greater surface areaon the bottom of the shoe for added grip, and better ankle support. This is dueto the nature of their play-style and the fact they are guards and must shiftdirections much quicker than bigs, just wearing certain shoes will make adifference in your performance whether it being an increase in speed, anklesupport, or shock absorption. Shoes are constantly being biomechanicallyimproved and put out into the market to keep the game of basketball interestingand ever-changing. Techniqueof a Skill: In basketball one of themost vital skills is the ability to shoot the ball, many players have differentways of doing this but the best all follow a general pattern to improve theefficiency and transfer of force to maximize their chances of sinking the shot. When you get ready to take your shot you want to keep your eyes on the targetand not the path of the ball, you should have your feet shoulder width apartwith a slight bend in your knees and holding the ball in your shot pocket. Lineup you’re your body so the ball and your shooting eye form a straight line, make sure you are holding the ball with your fingertips parallel to the longseams on the ball. Start by bringing the ball upwards with your elbow under theball, the ball needs to stay in front of you and should never go behind yourhead, uncoil your body by springing up with your legs, core, and arms allsynchronized, your elbow and wrist should extend in a straight line towards thehoop.

Release the ball just before the apex of your jump, your wrist should berelaxed and your fingers pointing at the basket, then hold your follow throughuntil the ball hits the rim. The best shooters all follow these rules but themost important one is consistency, if you look at all the best shooters andtheir form they always repeat the same motion and generate the same amount offorce in their shot, this is the difference between a good shooter and a greatone.    3Principles of Biomechanics in Basketball: In biomechanics there areseven principles one of them is stability, it is the ability to maintainbalance, it states: the lower the center of mass the larger the base of support, and the closer the center of mass to the base of support. In basketball when shootinga free-throw, players will get into a slightly bent down position to lowertheir center of mass and increase their stability. For bigger players such ascenters they use all their mass by increasing their base of support andlowering their center of mass when getting ready to box out an opponent for arebound. Maximum force requiresthe use of all possible joint movements the contribute to the objective, inbasketball this can be any action that requires maximum effort to be applied toperform the action such as jumping or going up for a dunk. Torque is angular motionthat is produced by the application of force acting at some distance from anaxis, in basketball this can occur during a windmill dunk as the force is away fromthe axis being the shoulder and allows rotation to occur. 360 dunks and layupsare rotations of the entire body and require a great deal of force to beproduced to turn the players whole body 360 degrees.

Motor Development inBasketball: MovementIntelligence in Basketball: Movement intelligence isthe ability for us to identify and utilizethe sweet spots of ideal coordination, in basketball this is where efficiency andusing the quickest way to get around the floor to score points comes in. If youlook back at early shooting forms in basketball players used to shoot with bothhands which generated more force but skewed the ball left or right, modernplayers shoot only with one hand while the other is used to guide the ball. This if more efficient and requires less energy to be used, along with thesweet spot of making a basket which is at a 52-degree release, 3 revolutionsper second of backspin and aiming for a spot 7 centimeters back from the centerof the basket these are all movements that players are slowly understanding andchanging their forms to optimize their chances of achieving better movement intelligence.

SkillBreakdown of a Skill: In the 3-point shot aplayer will pre-load his muscles by coiling up and getting ready to release allthat energy into his shot, this stage is the pre-stretch and the athlete lookslike he is slightly bent over and looks like his is about to jump. When theplayer finally jumps all his muscles must activate together as this moment is knownas the critical instant where all the task become ready to execute at the sametime. The follow through happens right after the ball is released from theplayers hands, it helps the athlete remember how he performed the action so thenext time he does it he doesn’t need to think about what his last shot waslike.

It is easy to tell when the follow through occurs in basketball asplayers will have one arm in the air with the wrist down. OperantConditioning in Basketball: Operant conditioning is atype of learning where behavior is controlled by consequences. In basketball whenyou play good during games or always show up to practice your coach will rewardyou with praise and more playing time, this reinforces your positive imagelinked with working hard and getting playing time because of it.

This methodturns those who are already hard workers into gym rats who will do anything toget better whereas those who have off games or don’t show up to practice willhave consequences and result in them linking negative things with playing badand going to practice. Coaches will use this to try and shape and mold athletesinto their minds ideal player even if it doesn’t line up with the athletes own. ClassicConditioning in Basketball: Classic conditioning is atype of learning that takes two unconnected external stimuli and links them toone natural occurring stimulus. In basketball when a player hears a whistlethat tells them to stop or go but by itself a whistle doesn’t mean much and won’tgarner a response but if you take a whistle and the stop or start of a game andput these two unrelated things together they will be associated together and causea certain response to occur which is players starting or stopping when theyhear the whistle.   Sports Psychology inBasketball: Wheelof Excellence in Basketball: Thewheel of excellence is made up of seven parts and all of them are connected toone central theme of believing you can do it and committing to it.

To succeedin anything, you must make sure you accomplish all the seven steps, if you everfailed at something it was due to one of the steps not being completed. Inbasketball these steps play major roles in becoming an all-star athlete in thesport. When I try to improve in basketball I will take certain steps to try andimprove my game, when I start to practice it has my full attention and I blockout all possible distractions that might disrupt my practice.

I mentallyprepare myself for everything that comes with practicing basketball while believingthat I can accomplish my goals and listen to constructive evaluation to improvemy game based on feedback from coaches or players. Things I could improve onwould be my commitment to basketball as I only practice when I feel like it anddon’t dedicate enough time to the game, another zone that needs improvement ispositive imagery as I don’t think of my body as a basketball players body dueto my lack of height which affects how I play the game and what I focus on whenpracticing.    Self-Talkin Basketball: Self-talk is important ineveryday life, whether you are lying in bed trying to talk yourself to get upor preparing yourself for a presentation self-talk plays a vital role, andsports are no different when it comes to self-talk. When players go to take a free-throw, or go up for a shot majority of them are giving a positive self-talk, it couldbe along the lines of “ relax”, “ it’s going to go in”, or “ he can’t guard me”.

Allthese things said are positive reinforcement to improve the athletes game andgive them a mental edge against their opposition, if you think that you can’tdo something or that your shot won’t go in it won’t cause you don’t think youcan do it. If I were giving myself a self-talk I would always tell myself whatI would want to hear such as “ I’m making that shot”, or “ I’ll make thisfree-throw” as this tells my body that I can do it and will make me perform atmy best. Imageryin Basketball: Imagery in basketball wouldbe visualizing yourself making a shot, layup, block, or getting a rebound, whileplaying a sport, before you do an action you visualize what could happen andmore so what you want to happen. This is imagery, and it helps athletes preparethemselves mentally for whatever action they are about to take. When you go to takea shot, you don’t visualize yourself missing because that would be a negativeoutcome, I would use imagery to picture my shots going in, doing a nicecrossover, or layup, there are many studies showing that positive imagery orthinking of a good outcome leads to that given outcome rather than negativeimagery which leads to negative outcomes. SuccessCycle/Failure Cycle in Basketball: The success cycle startswith believing in your potential and the amount of potential leads to theamount of action you take and that leads to results based on the action you took; the cycle then repeats and this is what gives someone success. I have seen thesuccess cycle in basketball with players like Isaiah Thomas who are undersizedand taken late in the draft and are called busts.

Because Isaiah believed inhis potential he worked on his craft as much as possible which made him takeaction, that lead to great results such as him now being in a starting role andbeing talked about as one of the best point-guards as of right now. The failurecycle is the opposite of the success cycle as players who get trapped in thefailure cycle never seem to get out of it. An example of it shown would be anyNBA bust. They had bad seasons or injuries and that led them to not believe inthemselves which hurt their potential so when they acted they didn’t get theresults they wanted. This threw them into to a vicious cycle where the only wayout was to not try anymore and this led to short careers and being known asbusts.

Nutrition for Basketball: Pre-gameGuidelines for Basketball: When getting ready toplay a long basketball game it is important that you properly fuel your bodywith the food needed for the match. It is best to eat a mealrich in complex carbohydrates an hour or two before the basketball game starts. This will give the player a steady boost of energy during the entire game. Foods rich in complex carbohydrates include pasta, cereal, vegetables, peanutbutter and bread.

It is also important to stay hydrated by drinking plenty ofliquids throughout the day as well as during the game itself. Itemsto Improve On: I could improve on thetype of carbohydrates that I eat as most of them are simple carbs and haveempty calories, I also don’t drink enough water before or during the game whichleads to me being dehydrated and performing poorly. Strengthsof My Diet: When I eat, I always tryto eat balanced meals even when the meals are not the healthiest so I can makesure I am getting all the nutrients that I need. I space out my mealsthroughout the day and try to always eat something rather than missing out onit due to time constraints.  Sports Injuries inBasketball: CommonInjuries in Basketball: Basketball has manyinjuries that come with playing the sport, the most common injury is a sprain whetherit be to the wrist, finger, knee, or ankle.

A sprain is a stretching or tearingof one or more ligaments, they can occur in basketball when you try to changedirections to fast or land awkwardly on a limb. Treatment for ankle sprainshould follow the R. I. C. E method of rest, ice for the first 48-72 hours, compression for the first 24-36 hours, and elevating the injury above your heartfor 2-3 hours a day. Head trauma such as lacerations or concussions are alsocommon in basketball and be caused by colliding with a defender or getting hitin the head.

Treatment for mild concussions is rest and over-the-counterpainkillers but if it is more severe you should seek medical attention rightaway. The next common injury in jumper’s knee or patellar tendonitis, it is theinflammation of the patellar tendon. It is caused by repetitive stress placedon the patellar tendon or quadriceps tendon due to jumping which happens allthe time in basketball. Treatment for this injury should follow R. I. C. E, rest forthe injury however should take 2-4 weeks.      Sociology of Basketball: Historyof Basketball: Basketball was created in1891 in a YMCA training school in Springfield, Massachusetts by the CanadianJames Naismith, the sport originally only had 13 rules and was played with asoccer like ball being shot at peach baskets 10-feet of the ground.

Since thenthe sport of basketball has changed tremendously and is one of the most popularsports today. EquipmentRequired for Basketball: The equipment needed toplay basketball is few and is not necessarily needed to play a simple pickupgame. To play the sport of basketball you must have basketball shoes, a court, uniform, shot clock, hoop, and a whistle. Barriersin Basketball: Barriers in basketballcan range from disability to socio-economic standings. Players withdisabilities cannot play in the NBA but have disability leagues for them tostill enjoy the sport and play it competitively, racial barriers are not that prevalentin basketball as other sports due to the wide demographics of ethnicities inthe sport. Athletes that are from low socio-economic classes will find it hardto enlist in rep leagues as they require a good amount of money to participatein however, this does not stop them from participating in the sport as a wholeand from even going pro. ClubOrganization in Basketball: When starting basketball, you can start in recreation leagues that are usually offered through the cityand have different leagues based on age and skill, the next level would be highschool.

When playing for your high school team you will be facing many playerswith different skill levels and be required to consistently improve your game. College basketball such as the NCAA governs all collegiate basketball andteams, players in this league will be looking to go pro and will not back downfrom the increase of fierce competition as they all are looking to make aliving from the sport. The NBA is the highest level that one can playbasketball at, players in this league are the best of the best and some might evenget the chance to go down in the basketball hall of fame. This level requiresyou to focus all your time on the sport as this is now treated as your job.        Basketball’sLong-Term Athlete Development Model: Basketball fits theL. T. A.

D model, active start is for ages 0-6 years old and basketball offersleagues for this age group that helps them stay active and works on their fitnessand movement skills development. FUNdamentals is for ages 6-9 years old andyouth leagues offer this to promote participation, overall development, and cognitivedevelopment of required skills. Learning to train would fall under the youthleague while training to train and training to compete would be rep leagues asthey offer more competition and better skill development opportunities. Training to win would be provincial and national leagues that offer the best playersfrom all over the world to compete head-to-head and have highly skilled coachesand trainers helping players reach their full potential. Active for life wouldbe senior recreation leagues that focus on being active and friendly competition.