FASTLANE

SUMMER SWIM PROGRAMS

SUNDAY SWIMS IN SCOTCH PLAINS

Coach Bill Reichle will be holding Masters swim workouts at the Highland Swim Club on Martine Avenue in Scotch Plains on Sunday mornings from 8:30-10 am. The program runs from June 27th to August 15th. Drop in fee is $5. For more information contact Bill Reichle at reichsswim@aol.com or 908/ 587-2053.

LONG-COURSE TRAINING AT RAHWAY RIVER PARK POOL

Coach Ed Nessel will hold workouts at the Rahway River Park Pool for the 19th summer!

Workouts run from Mon thru Friday 6AM to 7:30AM…mostly Masters with some older age-groupers and 7:15AM (slight overlap) to 9AM…mostly age-groupers with some Masters. Saturdays 7AM to 9AM…almost all Masters with a few older age-groupers.

The program starts Monday, June 21 and lasts for about 8 weeks. Costs: $285 the season (best deal) or $8.00 per day.

Everyone who swims must be an active member of USMS or United States Swimming for insurance purposes.

OCEAN WORKOUTS

A group of Masters swimmers will hold informal open water practices at Spring Lake on Thursday evenings starting June 24, water temperature permitting. Swimmers will meet on the boardwalk at the intersection of Ocean Ave. and Brown Ave. The swims will be about a mile and will start at 6 pm. If you're interested, contact Jack Frain at 908/596-0425 or jjfrain@hotmail.com.

SIGN UP FOR THE 30-MINUTE FITNESS SWIM CHALLENGE!

The 30-minute challenge is a fitness postal event designed to motivate you to swim continuously for 30 minutes. It can add to your overall fitness, measure your fitness level and may motivate you to compete in longer distance swims such as the One Hour postal swim.

The 2004 30-Minute Fitness Swim Challenge is sponsored by the USMS Fitness Committee and is presented by O*H*I*O Masters Swim Club. You can take the challenge anytime in 2004 in any pool 20 yards or longer. You can swim this individually, or your whole team can take the challenge. For more information, click on the web address below or contact Tom Spence at talltom13@msn.com or go to http://www.usms.org/fitness/usms%2030%20minute%20swim.pdf

INSIDE THIS ISSUE

WATER WRINKLES

By C. Claiborne Ray

Q. Why do my fingers wrinkle after I swim for an hour when my friend's fingers don't?

A. It is possible that the tough outer layer of skin on your friend's fingers, and on the toes and soles of the feet as well, differs from your own, either in thickness or in the amount of the protective oily substance called sebum that coats it.

Prolonged immersion in bath, water, the ocean or a pool can wash away sebum, leaving the closely packed cells of the outermost layer of the epidermis, the stratum corneum, exposed to water. The stratum corneum is thickest on the hands and feet, protecting them from wear and tear.

The cells of the stratum corneum, which the body is constantly shedding, contain keratin, a tough substance that also forms hair and fingernails. When exposed to water, these cells absorb it like a sponge and swell.

Since cells of the lower layers of the skin do not absorb water and do not change shape, the usual explanation for puckered fingers and toes is that the expanding stratum corneum ends up pleating like corrugated cardboard.

The puckering is harmless and is quickly reversible as the cells dry out and the body produces replacement sebum.

–Taken from 5/25/04 New York Times

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DEAR EARTHTALK: WHAT ARE SOME WAYS TO MAINTAIN A "GREEN" SWIMMING POOL?

by Jim Humphey, North Andover, MA

The primary health and environmental drawbacks to swimming pools are water waste, energy waste and overuse of chlorine. Chlorine is very irritating to the eyes and skin, and can trigger breathing difficulties by also "stinging" the sensitive tissue of the lungs. The chemical's effects in a swimming pool are heightened when it comes into contact with sweat or urine. In fact, a recent Belgian study found a possible link between childhood asthma and exposure to chlorine byproducts in indoor pools.

Zodiac Pool offers a system called Nature2 that doesn't do away with chlorine entirely but does greatly decrease the amount needed. It makes use of silver and copper to destroy bacteria and algae. Silver is a bactericide whose properties have long been known. Copper kills algae. When used together, they reduce chlorine needs by 90 percent. Another product, from ChlorFree, combines silver and copper with zinc, activated carbon and other non-invasive materials to sanitize and control algae and bacteria, and also greatly reduces the need for chlorine.

According to the National Sanitation Foundation, another substitute for chlorine is ozone, which is made from oxygen and does not degrade into harmful chlorinated byproducts in a swimming pool. The Chlorine-Free Products Association recently endorsed an ozone-only public pool built for the city of Fairhope, Alabama. The pool has been operating successfully since construction without the need for harmful additives. Ozone systems for residential pools are slowly becoming available. Sunshine Pool Products makes one that, according to owner Richard Barnes, should enable a completely chlorine-free environment if installed properly and at the right size for the size of the pool.

Pool owners can save energy while still maintaining a pristine pool by using a timer to shut off the pump for at least 12 hours of the day. To hold in heat during the night, always use a pool cover, as almost all of a pool's heat loss occurs at the surface. By employing a bubble cover (sometimes called a solar cover), outdoor pools can also gain heat, by absorbing 75 to 85 percent of the solar energy striking the pool surface. A pool cover can also reduce water loss by 30 to 50 percent--and reducing water loss also reduces the amount of chemical water treatment required.

Besides that, the easiest way to save energy is to lower the thermostat on your pool's heater (if it has one) so that it heats the pool no higher than a minimally comfortable temperature. Every one-degree reduction in temperature can cut your energy use by between five and 10 percent.

CONTACTS: Zodiac Pool, Inc., (800) 937-7873, www.nature2.com; ChlorFree, 506/665-0896, www.chlorfree.net; Sunshine Pool Products, 801/728-4520, www.sunshinepool.com; National Sanitation Foundation, 800/NSF-MARK, www.nsf.org; Chlorine-Free Products Association, 847/658-6104, www.chlorinefreeproducts.org.

–Taken from E/The Environmental Magazine's website at: www.emagazine.com, 5/2/04

QUESTIONABLE EXERCISES AND MOVEMENTS

by Edward H. Nessel, R.Ph, M.S., MPH, PharmD.

OVERVIEW

One of the prime exponents of good public health is the established benefit of regular appropriate vigorous exercise. But good public health dictates we place a balance of safety with this intense activity such that the athlete must consider the potential for injury if he chooses to move his body in a possibly harmful way or exercise incorrectly or work out before the body is ready to handle same. The exercises and movements to be discussed are not always given the respect they deserve when it comes to safely gaining strength and range-of-motion (ROM). Caution to prevent potentially serious injury is the main impetus for this article. For the most part, movements to increase flexibility (stretching) and muscle fitness, using the spine, the hip, and the knees as focal points will be dealt with in detail. Since much has been written about the shoulder in regards to swimming, I see no need for its inclusion in this paper. It should also be noted at this time that a proper stretch should be done on warmed-up muscles, be held for 30 seconds, and have no ballistic movement or shaking. If a second bout of stretching is needed for excessively tight muscles, another 30 seconds should be allotted. A good stretch with muscles kept warm can last for two hours or more.

Any activity selected for an exercise program should obviously have some underlying value (e.g., increased flexibility, strength & power, cardiovascular fitness). It is in common agreement, that to perform up to one's athletic potential, strength, power, and endurance must be incorporated into any training regimen. However, even some exercises that have positive intentions might have elements that can make them inappropriate or even dangerous if done incorrectly. Thus, an exercise for extremely physically fit individuals can be appropriate because the quality of movement they display in doing it meets the objectives for which the exercise was designed. However, if the same exercise were done by individuals with average to poor physical fitness (e.g., lack of flexibility or, say, a weak abdominal musculartur) their movements through them could be deemed inappropriate or even contraindicated because their quality of movement is poor.

To make this presentation more meaningful and easier to follow, gross anatomical and biomechanical factors of the various body segments listed will be discussed. We need to know how much safe movement can occur at various joints and how movement quality and movement tempo relate to this.

THE SPINE

ANATOMY

The spinal column consists of 7-cervical, 12-thoracic, 5-lumbar, and 5-fused-sacral (sacrum) vertebrae. (The sacrum is important in that it transfers the weight of all structures above it to the other bones of the pelvis.) Any two vertebrae and their intervening disc are called a motion segment of the spinal column. A motion segment is the smallest functional unit of the spine. There are definite points of contact (front and back) between the upper and lower vertebrae. The intervertebral disc acts as a spacer and shock absorber for each unit up and down the column. These discs also allow for movement between the vertebrae. What is inside the disc is a fluid-like substance…similar to the set-up of a jelly donut.

BIOMECHANICAL MOVEMENTS

The NECK (CERVICAL region) allows for an exceptional amount of movement, the most of the spinal column. It is best to describe this movement in terms of degrees of range of motion (ROM). When describing ROM for extension (head bowed) and flexion (head way back), we see an average of 145 degrees. We can also produce a total average of 90 degrees, 45 degrees to each side, left and right, of lateral flexion where we try to put our ears on our shoulders. Finally, total axial rotation where we look left, then right comes to about 180 degrees.

We see the most movement (rotation) occurring between the top two cervical vertebrae (C1 & C2). Approximately 10 degrees of motion exist between the remaining motion segments of the vertical vertebrae.

The TRUNK area, taking up the majority of the spinal movement segments, allows for movement backward (hyperextension) and forward (flexion), (figure 1). To be accurate: that flexion at the lumbar region is just removal of the normal curvature (lordotic curve); in actuality, people really do not flex their lumbar spines; the flex at the hip. But, if for any

Fig. 1. This figure presents the limits of lumbar spine ROM in the sagittal plane (i.e., extremes from backward to forward bending). If the individual were to reach towards his/her toes from the forward position, the additional movement would occur at the hip joint

reason movement exceeds an individual's end-ROM for spine flexion, or lateral flexion, there could be compression damage to discs, nerve components, and vascular structures on the side of the bending, and stretching of ligamentous and other soft tissues on the opposite side. Of end-ROM in rotation is exceeded, the outer fibers of discs could be torn. Although seemingly innocuous, movements such as these may lead to repetitive micro-trauma.

The first few times normal range-of-motion (ROM) of a joint is exceeded, perhaps only a few bands of collagen (a constituent of connective tissue seen in ligaments, disc, and in other soft-tissue structures) are damaged. However, repetitive micro-trauma can eventually lead to serious damage of vital tissues.

With regards to hyperextension…this is a natural movement of the spine, and it is in the best interest of the biomechanics of the spinal chord to maintain this mobility. If such mobility is not maintained, it will be lost. Nevertheless, it is acknowledged that uncontrolled or ballistic-hyperextension movements of the spine are totally inappropriate because they can stress and damage the posterior (back end) aspects of one or more motion segments and produce compress fractures. But "slow and controlled" hyperextension movements are appropriate for inclusion in exercise programs; in fact, they are a prime element in certain rehabilitative exercise therapy programs for individuals with neck or low back pain. With this in mind, it is very important that spine movements be carefully taught and monitored by exercise leaders (personal trainers, coaches, physical therapists, etc.) because some individuals do not have a very good awareness (kines

Continued on page 4

Continued from page 3

QUESTIONABLE EXERCISES AND MOVEMENTS

thetic sense) of how they move and position their body parts when they exercise.

Excessive and uncontrolled rotation movements of the spine (e.g. as in an intense "no" headshake or severe twisting of the trunk) are of utmost concern. As previously indicated, the greatest rotational movements exist between the first and second cervical vertebrae; and again, there are only about 10 degrees of rotation between the other motion segments in the cervical region. But in the lumbar region only about 3 degrees of motion exist between each vertebrae. Here the restriction is due to the structure of the posterior portions of the motion segments (the facet joint). If spinal rotation exceeds a joint's physiological limits, excessive stress may be placed on intervertebral discs, their supporting ligaments, and their nervous and vascular tissue.

The PELVIC area which includes the HIP JOINT has strong muscularity through it. These muscles can become too tight, which would adversely affect the hip's movement in relation to the trunk's movement. The posterior-lateral (back) wall of the pelvis is composed of the five fused sacral vertebrae which make up the sacrum and ilia…together called the sacroiliac joint. Since this joint permits so little movement it affords the pelvis the ability to become the foundation of support of the spinal column. Therefore tightness in any muscle crossing the hip joint can adversely affect the biomechanics of the spine. It is for this reason that increased ROM in this region of the body is earnestly sought. The normal range of motion for the hip joint in forward and backward bending is 135 degrees; this includes 10 degrees of hip extension (backward) and 125 degrees of hip flexion (forward). Besides the joint capsule, hip joint extension can be limited by tightness of the hip flexor muscles (e.g., iliopsoas muscle). When the knee-joint is extended (legs straight out), hip-joint flexion can be limited by the hamstring muscle group that crosses both hip and knee joints. Although other hip-joint muscles are also important, the flexors and extensors of the hip have greater roles in exercise considerations than do the other muscles and will be analyzed in this article.

Exercise Concerns Involving the Spine

Cervical Spine Range of Motion (ROM)

Fig. 2. The Yoga Plough Exercise. Although this exercise can stretch the low back (e.g., if the legs were bent and brought to the mat), it can place an undue amount of the body weight on the cervical and thoracic spine. It is for this reason that it would be inappropriate for individuals with either arthritis or osteoporosis of the spine, or for amenorrheic young women.

The yoga plough (figure 2) is done when lying on the back and extending the legs overhead and backwards behind the head and neck; this movement involves transferring the weight of the body over the cervical spine. The purported purpose of this exercise is to stretch the lower back muscles; however, the extreme amount of flexion of the neck that occurs in doing this exercise can be problematic. This exercise would be particularly inappropriate for individuals with either arthritis or osteoporosis of the spine. But this movement may not pose a problem for healthy youngsters. On the other hand, exercises involving neck hyperextension (as seen with neck circles) are considered potentially dangerous if done forcefully and quickly (e.g., a chiropractic "snap of the neck"). The danger here lies with the fact that there can be compression of nerve and vascular structures at the base of the skull and potentially damage discs and other soft tissue structures. Along with this cervical involvement, constant, repetitive rotational movement as seen with turning the head to the side to breathe in freestyle can produce both a muscular and arthritic condition especially in the older athlete. This can be obviated by simply using correct modern technique: the neck muscles should not turn the head to the side; the whole body rolls to the side with the head and neck remaining in line with the spine. Neck hyperextension (forcing or keeping the head backward) can be dangerous for those suffering whiplash, degenerative joint disease, and/or osteoporosis. (This position is often seen during swim training with prolonged kicking with a board, and the head held up). With older aquatic athletes, prolonged holding of this head-up position can often lead to arthritic deposits in the cervical region. But again, hyperextension movements can be considered safe if done slowly and with controlled movement in the normal range of motion with younger athletes. Conversely, much less support exists for bridging (where one lies on the back, then the body's weight is supported only by the feet and the neck/head segments touching the ground as the back is arched upward). This has been forced upon wrestlers and football players for years to supposedly strengthen the neck. It is absolutely inappropriate for anyone because of the extreme pressure it places on the cervical discs. A corollary to this situation would entail the bench-pressing of too heavy a weight load. Many who try to move more weight than they have adapted to with the bench press bend their necks to help with the movement; this can produce enough pressure on the cervical spine to cause an impingement on the nerves leaving the neck…producing tingling, numbness, and even paralysis in the arms and fingers.

QUESTIONS TO ASK WHEN JUDGING AN EXERCISE OR AN EXERCISER:

- Does the exercise have an underlying value that will allow the participant to reap its benefit…specific to the chosen sport?
- Does the exercise present an element that could make it inappropriate for some participants?
- Do the benefits of doing the exercise outweigh the drawbacks?
- Do the exercisers perform the exercise in a manner that makes it beneficial?

Trunk Rotational Movements

With only about three degrees of rotational movement safely allowed for the many spinal movement segments of the trunk, the use of ballistic twisting to strengthen the muscles for lateral movement (internal/external obliques, transverse abdominis) or free weights with twisting motions is not a wise choice. The momentum that comes with moving a dead weight side-to-side could cause the twisting motion to exceed this rather limited range of rotational mobility and cause bone and disc damage in the thoracic and lumbar sections of the spine. Better to use latex tubing where the tension and rotational movements can be

Continued on page 7

Jason E. Nessel Memorial Invitational

Sanctioned by USMS and the NJLMSC. Sanction # 074-003

Date and time:	Saturday, August 7, 2004 Warm-up 7:15 a.m. Deck entries close at 8 a.m. Meet starts at 8:30 a.m.
Facility:	Rahway River Park Pool is an 8-lane, 50-meter outdoor pool. Diving well dedicated to warmup/warmdown.
Eligibility:	Open to all USMS-registered swimmers in good standing for 2004; a NJ Registrar will be at the meet.
Fees:	Meet surcharge: $10., $4 per event if pre-entered by August 4, 2004. Deck entries: $5 per event. Relays: $8.
Age group:	Competition will be in 5-year age brackets beginning at the 19-24 age group. Relays = SUM of ages of swimmers.
Awards:	Custom medals to the first 3 places in each age group per individual event; ribbons 4th through 6th places. There will be individual high-point men's and women's medallions. A 4-color commemorative participation patch will be given to each relay member and/or can be purchased for $5 each.
Director:	Ed Nessel (908) 561-5339 e-mail: EdNessel@aol.com
Registrar:	Ed Nessel, 10 Irene Ct., Edison, NJ 08820-1024. (Complete the meet sheet and send to registrar with fees and copy of USMS card.)

MEET CONDUCT

Must be at least 19 years of age and registered with USMS; a horn starting device with electronic timing will be used (except for 50-meter swims). Mixed participation in heats and deck seeding will be used to speed the meet along, as the pool MUST be cleared by 1 p.m. USMS rules will govern. Top-10 times will be submitted (including relays) for properly-registered swimmers. Since the pool has a shallow end, only 4x100 relays will be run with everyone going off the blocks.

DIRECTIONS

If coming from the NORTH, take the Garden State Parkway South to Exit 135 (Westfield, Clark). Once off the Parkway, bear LEFT and follow signs to RAHWAY and "hospital." Go under PARKWAY, and make immediate right onto BRANT Ave. Go straight until light (Westfield Ave.) Turn LEFT onto Westfield Ave. and go through a few lights for about a mile. You will come to a main intersection (ST. GEORGES AVE.) Make a LEFT onto St. Georges Ave. and go 1/4 mile and turn LEFT into RAHWAY RIVER PARK. Go around the park until you come to pool complex on your left.

Jason E. Nessel Memorial Invitational

Saturday, Aug. 7, 2004
Rahway River Park Pool
Hosted by Jersey Masters Swimming & sanctioned by USMS and the NJLMSC. Sanction # 074-003

Name: (print)_____ DOB: _____

Address: _____ City: _____ State: ____ Zip: _____

USMS#: _____ Club: _____ Phone:_____

EVENT:	TIME:	FEES:
1. 50M freestyle		Meet surcharge $10.
2. 100M breast		____ Events X $4.00 _____
3. 400M freestyle		____ Deck events X $5.00 ___
4. 100M butterfly		Relay X $8.00 _____
5. 200M IM		Total Fees _____
6. 100M backstroke		
200 choice of one of the following: (circle one) 7. 200M freestyle 8. 200M backstroke 9. 200M breast 10. 200M butterfly		ATTACH COPY OF USMS CARD. Make checks payable to Jersey Masters Swim Team
11. 50M butterfly		Enter times in LCM
12. 50M breast		Send meet entries to: Ed Nessel 10 Irene Ct. Edison, NJ 08820 by Aug. 4, 2004
13. 100M freestlye		
14. 50M backstroke		
15. 400 M medley or free relay		

RELEASE FROM LIABILITY- ALL COMPETITORS MUST SIGN

"I the under-signed participant, intending to be legally bound, hereby certify that I am physically fit and have not been otherwise informed by a physician. I acknowledge that I am aware of all the risks inherent in Masters Swimming (training and competition) including the possible permanent disability or death, and agree to assume all of those risks. AS A CONDITION OF MY PARTICIPATION IN THE MASTERS SWIMMING PROGRAM OR ANY ACTIVITIES INCIDENT THERETO, I HEREBY WAIVE ANY AND ALL RIGHTS TO CLAIMS FOR LOSS OR DAMAGES INCLUDING ALL CLAIMS FOR LOSS OR DAMAGE CAUSED BY THE NEGLIGENCE, ACTIVE OR PASSIVE, OF THE FOLLOWING: UNITED STATES MASTERS SWIMMING INC., THE LOCAL MASTERS SWIMMING COMMITTEES, THE CLUBS, HOST FACILITIES, MEET SPONSORS, MEET COMMITTEES OR ANY INDIVIDUALS OFFICIATING AT THE MEETS OR SUPERVISING SUCH ACTIVITIES. In addition, I agree to abide by and be governed by the rules of USMS."

Signature_____ Date_____

Continued from page 4

QUESTIONABLE EXERCISES AND MOVEMENTS

controlled by the exerciser. Strengthening the rotational muscles of the trunk is very important to making the long-axis strokes (freestyle and backstroke) strong and efficient in the water since good form requires constant balanced rotation.

HIP-JOINT FLEXION RANGE OF MOTION (ROM)

Fig. 3. Sit-and-Reach (SR). In the individual depicted the angle of the sacrum is about 50 degrees with the floor; this angle should be a minimum of 80 degrees[7]. If this individual with very tight hamstrings were to use this as a stretching activity, most of the stress would be absorbed by the soft tissue structures of the lumbar spine; thus the exercise would be most inappropriate.

The movements inherent in both the fingertips-to-floor (FTF) and the sit-and-reach (SR) exercises and tests (figure 3) have been questioned with respect to endangerment of the spine. If either activity is done repeatedly, and if the exerciser has tight hamstrings, the limited movement at the hip joint can transfer the stress to the connective-tissue structures of the spine. However, if the exerciser has good hip-joint flexibility, the activity is more apt to achieve what it is intended to do: stretch the hamstrings. If the tempo of the activity were increased markedly with lunges forward by one with tight hamstrings, the torso would generate greater momentum (more ballistic in nature), and there would be a greater chance that the posterior ligaments of the vertebral column could be damaged. Ideally, the spine should make a smooth arc; there should neither be a flattening nor an excessive curve in any area.

To stretch the hamstrings adequately, yet take excessive pressure off the lumbosacral spine, one should extend only one leg at a time with the other leg comfortably bent in a side-ways "V" (bottom of foot of bent leg resting against knee-area of extended leg).

HIP-JOINT/TRUNK EXTENSION STRENGTH

Hyperextension movements are appropriate as long as they are done slowly and under total control (not done ballistically). With this movement no active contraction of the muscles of the spine are seen…more of a flexibility movement. But if strengthening of the lumbar spine musculature is sought (as in a Roman-Chair activity), one should limit the extension backward to the extent of one's normal standing lumbar curve (e.g., do not hyperextend).

TRUNK/HIP-JOINT (FLEXION STRENGTH)

As mentioned earlier, the amount of lumbosacral flexion (bending forward) should be limited to the removal of the normal (lordotic) curve. Any subsequent flexion occurs at the hip…because the abdominal muscles do not cross the hip joint, they obviously cannot produce flexion at this joint. If an exerciser with weak abdominal muscles performs a full sit-up with legs either bent or straight out, what is mostly being asked to perform this task are the hip flexors. Over time they can become overstressed and then damaged. Thus, the full sit-up if performed enough times can cause low-back injury due to extremely high compressive forces on intervertebral discs.

Another element for potential danger is the increased tempo of a sit up along with hands being held behind the neck. The cervical (neck) region would be placed under increased pressure due to the hands helping the head rise with each sit-up. If the tempo is increased too much, the quality of the exercise diminishes; however, if an individual with strong abdominal muscles does the sit-up exercise at a cadence of about 30 repetitions per minute(one second up, one second down), movement quality is apt to be good. The one-per-second rule of exercise comes into play with many strength movements…mainly because the average racing swim cycle during a 100 yards/meters event gravitates to about one-per-second. To mimic this cadence with dryland exercise produces an appropriate cross-training adaptation.

THE KNEE

ANATOMY

Besides being the largest joint in the body, the knee joint is very complex because it includes articulations between (a) the femur (upper leg) and tibia (lower leg)…the tibiofemeral joint and (b) the patella (knee cap) and femur…the patellofemoral joint. The knee is particularly susceptible to injury because of the high forces it sustains due to its location between the body's two longest lever arms (femur and tibia). The one swimming stroke that places the knee in both the spotlight for necessary function and at risk for torsional (twisting) stress is the breaststroke.

EXERCISE AND MOVEMENT CONCERNS INVOLVING THE KNEE

Fig. 4. Standing Quadricep/Hip-Flexor Stretch. In doing this stretch the leg should be pulled straight back rather than back and to the side as shown. As depicted, excessive stress is placed on the medial soft-tissue structures of the bent leg; a simple way to avoid this stress is to hold the ankle with the opposite hand. (Note that the exerciser is leaning forward at the hip joint; although this is a common mistake and the posture is safe, increases in hip-joint flexion decrease the chance that the hip flexors are being stretched.)

The medial (toward the inside) structures of the knee (medial collateral ligament & medial meniscus) are put at risk for injury when individuals perform certain flexibility exercises like the standing quadriceps/hip-flexor stretch (figure 4) in which the hip is forced backward somewhat due to the ankle being grabbed from behind by the hand and pulled upward…sort of what a ballerina would look like stretching. The problem here lies with the hand being on the same side as the leg being stretched. In this instance, the same-side hand tends to pull the knee to the outside rather than straight back. This produces a torsion (twisting) of the knee that can lead to pain, weakness, and a less than optimum functioning of the fulcrum that allows the power to close (finish) the breaststroke kick with force. Better to have the opposite side hand pull the ankle back and up to prevent this outward twisting. Also be aware that everyday movements (e.g. sliding in and twisting in-and-out of a car) can create torsion at the knee joint which, combined with swim training, can lead to overuse stress on this most vulnerable but important joint.

Continued on page 8

Continued from page 7

QUESTIONABLE EXERCISES AND MOVEMENTS

The hurdler stretch (figure 5) is unique because it can be used for either stretching the hamstrings or quadriceps, depending upon whether body lean is forward

Fig. 5. Hurdler Stretch. This exercise is inappropriate for stretching either the (a) quadriceps (leaning backward) or (b) hamstrings (leaning forward). If this individual were to place his/her right foot adjacent to his/her left knee, it would be a beneficial hamstring stretch

or backward. In this procedure one leg is straight forward while the other leg is placed toward the back; the trailing leg has a natural bend to it at the knee. When leaning forward to stretch the hamstrings, the individual places a considerable amount of stress on the medial structures of the knee of the bent leg; strain or discomfort in the hip and groin area may also occur because the femur of the bent leg is placed in extreme rotation. A much better choice: while sitting on the floor or mat, bend the knee in front of the torso rather than to the back or side. Letting the sole of the foot of the bent leg touch the knee of the straight leg takes all sorts of pressure off the knee segment. If one were to use the hurdler stretch to lean backward, the quadriceps would be stretched; however, this movement, too, has its drawbacks because the position of the bent leg does not allow the pelvis to rotate as the trunk is brought backward. This results in a hyperextension stress being placed on the lumbar spine. Furthermore, the rotation of the tibia relative to the femur may damage the soft tissue structures of the knee.

Also questionable are exercises that involve knee hyperflexion (120 degrees and greater) because they markedly increase stress forces around the kneecap. If one knee-bends, say, to 90 degrees, the stress that is generated at the knee can equal 2-3 times the person's body weight. Exercises that are performed with added weight or that involve deeper squatting would increase the patellofemoral forces even further. What would help with protecting the knee, front and back, is simply making all the supporting and surrounding muscles stronger. Leg lifts & curls with moderate weight on a "universal machine" can produce a 90-degree knee flex which the knee joint can handle if trained carefully.

In general, high impact exercises are common injury mechanisms for the hip, knee, ankle, and foot. Those who swim are exposed to a gravity-free environment; the more the swim training, the more the body adapts to this body-friendly environment. Many swim programs place running, stair-climbing and jumping as part of the total training regimen. Research has shown that such movements can place up to six times the vertical forces on these joints as simple walking. Better to make use of the mechanical advantage of a bicycle for aerobic cross-training. The rubber tires will absorb the impact pounding that would otherwise fall to the above-mentioned joints.

Many exercises appropriate for some may not be for others. The quality of the exerciser's movements is an important variable when evaluating exercises for inclusion in a conditioning program. Since swimming is unique as it places the participant in an environment where gravity has no effect, what may work for land-based athletes may not be appropriate for swimmers.

HEART RATE TRAINING *By Cheryl Wagner*

Christy Garth, Assistant Varsity Coach of the University of Maryland swim team, should know a thing or two about heart-rate training. She swam in the Olympic Trials in 2000 and competed at the University of North Carolina from 1992 -1996. I asked her to describe how to do heart-rate training and here is her advice.

Take your base heart-rate every morning before you get out of bed. This is a good indicator of your training readiness and will help you decide how to train during that day. For example if you're overtrained, sick, or not getting enough rest, your heart rate may be elevated.

Heart-rates can be described using colors which correspond to the color of your skin while you're training in that "zone." For example, a heart rate of 20 beats per ten seconds would be white, 22 beats-pink, 24 beats - red, 26 beats - blue, 28 beats - green, and 30 beats -black. (Yikes!)

Blocks of six weeks are often used for training periods. At the beginning of the six weeks you may stay primarily in the "white" zone. As you progress into later weeks you move into more "advanced" colors for small portions of two or three training sessions per week. If you are doing a blue, green or black set, you should allow a very large interval for your all-out effort.

–Taken from 5/04 issue of the Swimmer's Ear newsletter, Potomac Valley Masters Committee

THE MAN WHO VIEWS THE WORLD AT FIFTY THE SAME AS HE DID AT TWENTY HAS WASTED THIRTY YEARS OF HIS LIFE.

MUHAMMAD ALI

AGING UP

This June and July eleven swimmers move up to a new age group.
Happy birthday to:

Julia Dolce	95	Linda Brown-Kuhn	45
William VanPelt	75	Louis Conte	45
Ellen Pease	55	Michael Leddy	45
Gail Stevancsecz	50	Lorna Cialdella-Morehead	40
Nancy Steadman-Martin	50	Joseph Nastasi	40
		Kathe Newman	35

ODE TO THE SWIMMERS IN THE LANE NEXT TO MINE

By Melanie Bowden

Oops, I hit your hand hard
during the freestyle set.
Please forgive me
for bruising you while wet.

My breaststroke kick
caused more injury.
I'm sorry my big foot
made contact with your knee.

During backstroke I think I
touched you in a private place.
I wasn't making a pass,
although you have a cute face.

And butterfly—forget it!
My form is so sad.
If I strike your arm,
please don't be mad.

I hope you don't charge
me with assault and
haul me into court.
Who knew swimming was
such a contact sport?

Taken from the 5/04 issue of the Davis Aquatic Master's newsletter, The Record Times, found at www.damfast.org

PLACES TO SWIM

Please let me know if changes need to be made at any time. I rely on you to keep this list updated. You can contact me (Linda Brown-Kuhn) at 908/479-1038 or lbk@sprintmail.com. -Thanks.

COACHED WORKOUTS

Berkeley Aquatics Contact: Coach Eric Fucito at the Berkeley Aquatic Club, Berkeley Heights; 908/464-0574 or njmasters@msn.com. Workouts: M 8:30-9:30pm, W 8-9:15pm, F 8-9pm, Sun. 8:15-9:45am

Bridgewater Pool/Somerset Valley YMCA Contact: Don Fink at donfink@comcast.net, workouts T at 8pm & H at 5:30am.

Hunterdon County YMCA at Deerpath Contact: Nancy Shapiro at the Y; 908/782-1030. Practice is W 8:30-9:45pm. Sandy Carosi holds workouts T, H 9:15-10am. Contact her at 908/236-0086 or jcarosi@aol.com.

Lakeland Hills Masters Team Contact Pam Banks at swimbanks@earthlink.com or www.lhymasters.tripod.com\lhyms.html

Madison YMCA Contact: Jon Seigel; 973/822-YMCA, ext. 228 or marinersSwimming@aol.com or www.marinersswimming.com. Workouts are M & W 8:20-9:30pm.

Monmouth Swim Hawks Monmouth University, West Long Branch Workouts are T & F mornings from 7am-8am. Call Murray Simon at 732/229-7623.

Morris Center YMCA Contact: Jack Lawson at 79 Horsehill Rd., Cedar Knolls 07927; 973/267-0704.

Ocean County YMCA Masters Contact: John Morrison; 732/341-YMCA.

Peddie Aquatics Association Contact: Michelle Wriede, email at mwriede@peddie.org or call 609/529-4011. Practices are M-H 8-9:30pm, F 5:45-8am, 8-9:30pm, Sun. 4-6pm.

Ridgewood Y Contact Garret Orr; gso@entrepreneur-equity.com or 201/934-4222. Workouts are M & F 8:30-9:30pm.

Rutgers University Contact Alex Antoniou; 732/445-0457. Workouts are held at the Sonny Werblin Rec Center pool. Workouts: M-F noon-2pm, Sunday 5:30-7pm, M, T, H, F 6-7am, T & H 8-10pm, F 7:30-9pm

Stevens Sting Rays Contact: Cheryl Lee 201/216-8039. Workouts are M, W, F 7:30-9 pm; T & H 6-7:30 am and 8-9 pm; Sun 10-12.

The Atlantic Club Contact: Stephanie Crofto; 732/223-2100, ext. 318.

Union Boys and Girls Club Ron Karnaugh at RonKarnaugh@aol.com or call 973/868-9922. The Club is located at 1050 Jeanette Ave., Union, NJ 07083 908/687-BOYS ext. 24; Directions: www.bgcucaquatics.org; Updates: www.SwimMD.com

West Morris Area YMCA Contact: Bob Hopkins at 973/729-3686.

Westfield Masters Contact: Bill McMeeekan at 220 Clark St., Westfield; 908/233-2700. Workouts: M, F 7:30-9pm, W 8:30-10pm.

Wycoff YMCA Masters Contact: Doug or Ray at the Y; 201/891-2081. Workouts are T & H 7:30-8:30pm and Sat., 7:30-8:30am. During the winter call before Tues. workouts, as time june/july change due to kid's meets.

NON-COACHED WORKOUTS

Hamilton Area YMCA Contact: Nancy Shapiro; 609/585-1014. Workouts: M 8:30-9:45pm and Sun., 11am-12:30pm.

Newark YMCA Contact: Joy Henderson; 973/624-8900, ext. 6811. Workouts: M-F, 6-9am, 12-2pm, 6-7:30pm, Sat. 1-2pm.

Montclair Masters Contact: Omar Cruz, Montclair YMCA, 25 Pine Street, Montclair, NJ 07043; 973/744-3400x109. Workouts held M, W 6-7 pm, F 6:30-7:30 pm.

Princeton Area Masters Contact Paul Mucciarone, evenings at 609/655-0997 or at pfmooch@hotmail.com or contact Princeton Recreation Dept.; 609/921-9480 and ask for Katie Herlihy. Workouts are M-F, 5-6:45 am at the Princeton DeNunzio Pool.

Red Bank YMCA/Deal JCC Contact: Doug Rice; 908/741-2503.

Sussex County Masters Contact: Bob Hopkins; 973/729-3686.

Metuchen/Edison YMCA Contact: Jay Koperwhats at 908/548-2044.

Western Monmouth YMCA Contact Richard Wallace; 732/446-4589 (H). 973/482-6400, X 2256 (W), swimphil@optonline.net

Whippany Waves Masters Contact: Ben Gilbert; 201/428-9300

NJ LMSC
451 Sweet Hollow Road
Bloomsbury, NJ 08804

ADDRESS:

MEET CALENDAR

MEETS IN NEW JERSEY

JUNE 25
1 MILE BAY SWIM, KENNEDY PARK, SOMERS POINT, 6:30 pm start. Contact Karen Pratz, Ocean City Aquatic & Fitness Center; 609/398-6900 or http://lmsports.com/indepsw.htm

JUNE 27
6TH ANNUAL PLUNGE FOR THE PATIENTS SWIM (1 OR 3 MILE), WILDWOOD. Contact Vicki Ander, 410/502-5395, andervi@jhmi.edu

JULY 3
1.3 MILE OR A 5K BRIDGE TO BRIDGE RACE. Contact Sid & Kara Cassidy, 311 Montpelier Ave., EggHarbor Township, NJ 08234; 609/653-0939, sacissidy@comcast.net. 4:30 and 6 pm start.

JULY 3
1 MILE OCEAN SWIM, 9:30AM: BRADLEY BEACH; 732-776-2999 entry info.

JULY 10
1 MILE OCEAN SWIM, ASBURY PARK, 6:15pm: Contact pjnria@verizon.net or 732/449-3976 or http://www.raceforum.com/07/asburymile.pdf

JULY 17
1 MILE OCEAN SWIM, 7TH ANNUAL SWIM FOR THE DOLPHINS, WILDWOOD CREST. Contact Dave Hirsch; 609/465-5590 or contact L & M Computer Sports, 89 Park Dr., Berlin, NJ 08009; www.lmsports.com

JULY 24
1 MILE OCEAN SWIM, OCEAN CITY (34TH ST.). Contact Darren Hickman; 609/926-9191, darrenhickman@hotmail.com or go to www.lmsports.com

JULY 31
ANNUAL ANDREW B. MANNING OCEAN 1 MILE SWIM IN SEA BRIGHT, 6:15 pm. Go tohttp://www.raceforum.com/08/manning.pdf or 732-842-4317 or sandyhookers@comcast.net

AUGUST 7
JASON NESSEL MEMORIAL MEET, Entry enclosed.

AUGUST 14
MIDSUMMER OCEAN 1.5 MILE SWIM IN SEASIDE PARK, 732-341-9622 x2214 orjselli-to@ocymca.org

AUGUST 29
9TH ANNUAL 1 MILE MANASQUAN OCEAN SWIM, 8 am, 732-681-4094 or tkrug@opton-line.net

MEETS OUTSIDE OF NEW JERSEY

JUNE 13
4.4 MILE CHESAPEAKE BAY SWIM. Race was full as of 2/2/03. Call 856/468-0010 or www.lin-mark.com

JUNE 13
1 MILE BAY CHALLENGE SWIM, RUN AT FINISH OF 4.4 MILE CHESAPEAKE BAY SWIM. Go to www.lin-mark.com

JUNE 26
MADISON MILE, MADISON, CT. Contact Dave Parcells, 17 Yankee Glen Drive, Madison, CT 06443; 203/606-4529, dave@force5sports.com.

JUNE 27
1 AND 2 MILE LEHIGH RIVER SWIM, ALLENTOWN, PA. Contact James Platt, PO Box 3304, Allentown, PA 18106; jhp35@hotmail.com or Mike Seip, seip@enter.net

JULY 3
28.5 MILE SWIM AROUND MANHATTAN ISLAND, NYC. www.nycswim.org

JULY 17
0.5 MILE COVE TO COVE SWIM, NEW YORK, NY. www.nycswim.org

JULY 17
2.4 MILE RACE FOR THE RIVER (HUDSON RIVER SWIM), NYC. WORLD FINANCIAL CENTER TO CHELSEA PIERS. www.nycswim.org

AUGUST 1
1 MILE PARK TO PARK SWIM, NEW YORK CITY. www.nycswim.org

AUGUST 7
17TH ANNUAL 25K SWIM ACROSS THE SOUND (FROM PORT JEFFERSON, NY TO BRIDGEPORT, CT). Proceeds help cancer patients and their families. Entries are due by 5/31. Contact Dave Parcells at dave@force5sports.com or at 203-606-4529 or go to www.swimacrossthesound.org.

CHAMPIONSHIPS

JUNE 27
USMS ONE MILE OPEN WATER CHAMPIONSHIP, WILDWOOD, NJ. Contact Vicki Anders at 410/502-5395 or andervi@hjmi.edu. Go to www.usms.org/longdist/ldnat04/mientry.pdf

AUGUST 12-15
LC NATIONALS; SAVANNAH, GA. Contact Scott Rabalais at Scottrabalais@compuserv