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For Athletes, the Next Fountain of Youth?

By BILL PENNINGTON

The latest curative leap to heal professional athletes and weekend warriors alike may sound like science fiction, but it could transform sports medicine. Some doctors and researchers say that in a few years the use of primitive stem cells from infants' umbilical cord blood could grow new knee ligaments or elbow tendons creating a therapy that becomes the vanguard of sports injury repair.

Already, some sports agents are preparing to advise clients about banking stem cells from their offspring or from tissue taken from their own bodies as an insurance policy against a career-ending infirmity. Stem cell blood banks are promoting the benefits of stem cell therapies for the practical healing and rehabilitation of tendons, ligaments, muscle and cartilage. There are skeptics in the medical community who wonder how soon the technology will be viable, but enthusiastic advocates of the therapies say the time is near.

"It's not a pie in the sky notion," said Dr. Scott Rodeo, an orthopedist and award-winning research scientist at Manhattan's Hospital for Special Surgery. "Maybe it's not going to happen next year, but a three-to-five-year horizon is not unreasonable."

Dr. Rodeo has already practiced these technologies in laboratory surgeries on rats, methods that will be especially useful when reconstructing the knee's anterior cruciate ligament and the shoulder's rotator cuff. Both are common sports maladies that can be particularly daunting to surgeons because the body generally does not mend or restore the damaged tissue after these injuries.

"In each case, stem cells clearly have some beneficial role in inducing tissue regeneration," said Dr. Rodeo, who is also a team physician with the Giants and a former United States Olympic team doctor.

Some scientists say now is the time to safeguard athletic prodigies, even kindergartners.

"If you have a child who has exceptional athletic talent at the age of 5 or 6, you might want to get a muscle or fat biopsy to draw and freeze some young stem cells," said Dr. Johnny Huard, the director of the Stem Cell Research Center of the Children's Hospital of Pittsburgh and a leading gene therapy researcher. "To have a pool of stem cells already removed would be enormously valuable. The practical use might be years away, but that's the future of sports medicine."

The kinds of stem cell therapies being researched for the most part do not involve the politically sensitive use of embryonic stem cells. But they could involve using harvested adult stem cells, stem cells saved from a child at birth or cells from what may someday be a national bank of donated stem cells derived from umbilical cord or placental stem cells.

While the stem cell therapies have gone beyond the theoretical stage, not everyone in orthopedics is convinced they will be useful in treating top athletes or anyone else.

***My interest:* Dr. Regis O'Keefe, spokesman for and Fellow of the American Academy of Orthopaedic Surgery, said attempts to use regenerated cartilage in knees has so far been "not highly effective." He noted that there have been no peer-reviewed studies for many of the proposed therapies and limited experimentation in humans.**

"There is a potential benefit but it's going to take years of clinical trials to acquire the scientific knowledge to know this is better than the current alternatives," said Dr. O'Keefe, who directs musculoskeletal research at the University

of Rochester Medical Center. “And without those trials we also cannot properly evaluate the risks.”

Dr. Freddie Fu, a pioneering orthopedic surgeon with the University of Pittsburgh Medical Center, agreed. “You have to answer safety questions and look for side effects,” he said. “It will also be quite expensive. Then again, knowing professional athletes, none of that will stop them. They will always be willing to try anything to help them play.”

With stem cell technology advancing, some are acting now to prepare for the wealth of restorative possibilities. Five professional soccer players had their children’s stem cells frozen at birth and stored in a Liverpool stem cell bank, according to a story last year in The Sunday Times of London. One of the players called the stem cells a potential repair kit for a career-threatening injury.

Stem cell therapies could do more than refurbish joints, they could help build muscle in elite athletes and increase other physical capacities at a pace and proficiency not conventionally attainable.

“There is a performance-enhancing possibility to all this,” said Dr. Huard, who added that he has met with doping officials who are trying to prepare for the new technology. “It might not be detectable because nothing is unnatural — they are your own cells. I don’t think you could turn a bad athlete into a super athlete but could you provide the edge that turns an Olympic silver medal winner into an Olympic gold medal winner? I think you could.

“At the same time, will this kind of engineering of the body hold up under the strain of competition at that level? How will it work in an intense, high impact situation like a pro football game?”

Arthur Caplan, director of the Center of Bioethics at the University of Pennsylvania, believes prosperous professional athletes will view the emerging stem cell technology as a fountain of youth.

“It all sounds good to them,” Caplan said. “They’ll charge in head first. But there’s danger in that.”

Leigh Steinberg, a veteran sports agent, conceded that the nation’s top sports stars would zealously pursue each orthopedic breakthrough.

“For good or ill, athletes have always been in the forefront of every new medical technique,” Steinberg said. “Whether it’s the use of human growth hormone or arthroscopic surgery, they are the workers in society whose livelihood most depends on their physical condition. If the medicine is proven out and it’s the difference between being able to play four more years at $8 million a year, every athlete will consider it a godsend.”

Steinberg said he expected to soon begin advising clients to bank their offspring’s umbilical cord stem cells, something Steinberg did when his own children were born.

In future years, if the use of the stem cell technology in sports becomes more widespread, it leaves open the possibility of professional athletes considering a pregnancy — or artificially creating one — solely to aid their ability to sign another $40 million contract.

“Something like that does make me nervous,” said Dr. G. Lynn Lashbrook, an Oregon-based agent, teacher and director of the Sports Management Worldwide Agency. “The athletic world is renown for not controlling its ethical compass.”

At the facilities storing stem cells, where samplings from the best American athletes or their offspring may already be frozen, confidentially agreements prevent officials from revealing the names of clients.

“Our bank does include people with strong athletic backgrounds,” said Dr. Robert Hariri, founder and chief executive of LifebankUSA, one of about 25 private cord blood banks in the United States. Prices for collecting and storing blood vary widely. Dr. Hariri’s facility, in Cedar Knolls, N.J., has about 35,000 units of stem cells; donors can have umbilical cord blood stored for about $1,900, plus $125 a year.

The primary uses to date for cord blood have been in the treatment of leukemia and other life-threatening diseases.

“The focus so far has been on more important things than fixing an athlete’s joints,” Dr. Hariri said. “But we’re well

aware of the possibilities and the revolution that is coming."

In the front lines of the revolution will likely be the best-paid athletes of the world.

"Take David Beckham as an example," Dr. Lashbrook said, referring to the English soccer star who recently signed a $250 million contract to play for the Los Angeles Galaxy. "If in a few years he had a knee injury, given the money at stake, what would be more paramount than getting him back on the field? His lifeblood and the franchise lifeblood would be dependant on the knee getting better as quickly as possible.

"So it is not a stretch to say that they would turn to the most advanced science available. Wherever it's available, I might add. History proves that."