

Vision training for Goaltenders

It's hard to imagine any NHL goalie getting ready to play or practice without a series of dynamic stretches and movements designed to warm up the key muscles required to stop pucks.

For many goalies, though, the most important muscles are in their head.

"Your biggest muscle as a goalie is your eyes," Washington Capitals goalie Braden Holtby said. "I do a lot of visual training in my pregame routine to warm up my eyes and keep them sharp. If you're not seeing it, nothing else matters. Your eyes are the basis of your whole game."

Whether it's bouncing balls off a wall or standing at the bench hours before the game with his eyes darting around an empty arena, warming up the eyes is a big part of Holtby's well-documented pregame routine. He's hardly the only one. Spend enough time in the bowels of NHL arenas before a game and you will see goalies juggling as often as stretching.

"I use it as a warmup for my eyes just to get my focus and concentration going, watching the ball spin, watching it into my hand," said Richard Bachman, who has seen time with the Vancouver Canucks this season in addition to playing in the American Hockey League. "I try to incorporate the vision and tracking that I use on the ice with a tennis ball."

Increasingly, that focus on being able to better focus the eyes is extending beyond warmups as more NHL goalies, coaches and even teams add vision training to their offseason.

One of Holtby's first interactions with Capitals goaltending coach Mitch Korn after he was hired in 2014 was a trip to Minnesota to have his vision assessed at McDonald Eye Care. Based on results of tests designed to measure how well the eyes worked together, they come up with a training plan, including unique eye exercises, to improve a goalie's vision.

It wasn't entirely new for Holtby, who told NHL.com he'd already done more advanced vision training with his old Western Hockey League goaltending coach John Stevenson, owner of Zone Performance Psychology in Edmonton. But that's certainly not the case for every athlete, and that's why Korn began bringing all of his goaltenders to McDonald Eye Care to have their eyes tested and trained during his years with the Nashville Predators.

Long-time Korn disciple Steve Briere did the same thing with James Reimer and Jonathan Bernier shortly after getting the Toronto Maple Leafs goaltending coach job last summer, and more goalies are now seeking it out on their own.

The first step involves testing the eyes to see how well they perform -- and whether they function together -- on four types of vision tasks: converging on an object coming toward them; diverging to be see a bigger, broader picture; accommodation for vertical movement; and tracking a variety of movement patterns. Based on the results, goalies can start to train away deficiencies.

"If your eyes are not doing all four of those accurately and correctly, you are not getting the most efficient results out of your eyes, even if you have 20/20 vision," said Dr. Tony McDonald, owner and founder of McDonald Eye Care. "Sports vision and therapy is a process where we try to get the two eyes working together more efficiently, and when they do one plus one can equal three. So how the eye physically moves around, how its muscles work, we determine the efficiency of all those vision processes and we can train exponential improvement."

The old cliché about keeping your eye on the puck remains true, but the reality is some athletes have undiagnosed vision deficiencies that don't allow it to happen properly or naturally.

Josh Tucker, owner and head trainer at Envision Sports in Minnesota, remembers a visit from a European goalie playing in the North American Hockey League. Tucker watched how his eyes moved as he was asked to follow an object moving in specific patterns.

"Ninety seconds into the assessment I said, 'You have all kinds of stuff going on when you look low right,' and right away he says, 'Ah, low blocker,'" Tucker said. "His teammate said it was the only place they could beat him, and when we watched his tracking, every time he looked low and to the right, his eyes would jump and skip over a part of the range of motion."

Tucker, who has seen some eyes jump like "lottery balls bouncing around" while trying to track an object moving in a straight line, was able to design a program to fix that hitch. But his work with goalies in the college and pro ranks quickly goes from fixing glitches to enhancing vision with a long list of drills and tools, including light boards and specialty strobe or 3D glasses.

"Vision is a goalie's most important tool," said Zane McIntyre, a Boston Bruins prospect playing in the American Hockey League and Envision Sports client. "It isn't just about being the biggest or strongest for us. I've seen great improvements in my game after working on my vision."

For some, it's about fixing a weakness specific to one side. Others with strong convergent vision can train divergent skills to increase peripheral awareness, while those already able to see the big picture can improve convergent abilities in order to see the puck into their body.

One NCAA goalie was able to predict his results when he said he saw everything peripherally but struggled to watch the puck into his glove. When Tucker tested him, sure enough his divergence scores were off the charts, but his convergence results were poor.

"So no matter how hard he tried to focus on watching the puck into his body, his eyes weren't geared to keep up with it," Tucker said. "Our role is to give them the visual tools they need."

Identifying deficiencies in how the eyes function and prescribing training improvements is one step.

Korn and Briere bring vision training onto the ice with the Capitals and Maple Leafs, using training tools like white pucks, including some with numbers the goalies read and call out as shots are coming, mini pucks, screen boards and light cones to keep their goalies' eyes sharp during the season.

Holtby's old goaltending coach takes it to another level off the ice using a machine called a Neurotracker, which is already being used by some NHL teams to train improved cognitive capacity.

"You are literally training your brain to process information doing multiple object tracking in 3D," said Stevenson, who also still works with several junior goalies in the WHL. "You are training your brain to see the playing surface at faster and faster rates."

Just like the vision aspects of convergence and divergence, which Stevenson also trains along with his wife, Jaci, at Zone Performance, the results are quantifiable and measurable.

"We can measure a person's processing speed or whether or not they are seeing a quadrant," Stevenson said. "It really is like weight training for the eyes and brain."

No wonder more and more goalies are doing it.