



Prize Winner

Science Writing

Year 5-6

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OSA Scientific Writing

AVOIDING SPORTS INJURIES

Whether you play sports or not, we all hate to see our favourite players get hurt. And getting injured yourself while playing your favourite sport is even worse! But what if there was a way to stop so many injuries from happening to athletes? Some injuries can end a player's career, while others are minor, but all injuries hurt, don't they? There are many types of injuries that can happen in sports including at junior level, including psychological injuries, which can be just as serious. Many of your favourite players might suffer from these without you even knowing! My scientific writing below focused on concussions related physical and neurological injuries.

What is a Concussion?

A concussion is a type of brain injury that happens when you get a bump, blow, or jolt to the head. In sports like footy, soccer, cricket, rugby and swimming it usually occurs by getting hit in the head. This sudden hit makes your head and brain move quickly back and forth. When this happens, the brain can bounce around, get squished, and twist inside the skull. This fast movement can change the chemicals in the brain and sometimes stretch and hurt brain cells.



Image Source: Adelaide Concussion Clinic

Concussions are very common injuries in many different sports as evident in the tables below. As the data below demonstrates, sports related concussion hospitalisations were increased significantly from years 2019-20 to 2020-21, specifically in the age groups 5-14, 15-24, and 25-44, these age groups usually involved in high contact sports like rugby, soccer and AFL.

Table A: Sports-related concussion hospitalisations, by age groups in Australia 2019-20

Sport or activity	Life-stage age group						Total
	0-4	5-14	15-24	25-44	45-64	65+	
Australian rules football	1	72	136	34	2	1	246
Basketball	0	37	41	10	2	0	90
Combative sports	1	8	18	14	1	0	42
Cricket	0	11	10	10	2	0	33
Cycling	10	134	104	81	83	29	441
Dancing	0	4	3	3	2	1	13
Equestrian activities	1	51	76	63	38	2	231
Hockey (all types)	0	5	6	11	0	0	22
Netball	0	6	15	3	1	0	25
Racquet sports	0	3	1	2	5	8	19
Recreational walking	0	1	1	3	6	12	23
Roller sports	6	79	52	23	6	1	167
Rugby (union, league and unspecified)	1	50	133	28	1	0	213
Running, athletics, track & field	2	8	5	1	5	2	23
Skiing, ice skating and snowboarding	0	15	11	11	5	3	45
Soccer	1	48	65	32	7	0	153
Surfing	0	2	10	7	3	1	23
Swimming and diving	2	8	3	8	0	0	21
Touch football	0	6	5	7	0	0	18
Wheeled motor sports	1	52	69	42	16	1	181
Other & unspecified football	0	28	52	16	0	0	96
Other	7	60	42	30	28	13	180
Total	33	688	858	439	213	74	2,305

Source: AIHW National Hospital Morbidity Database.

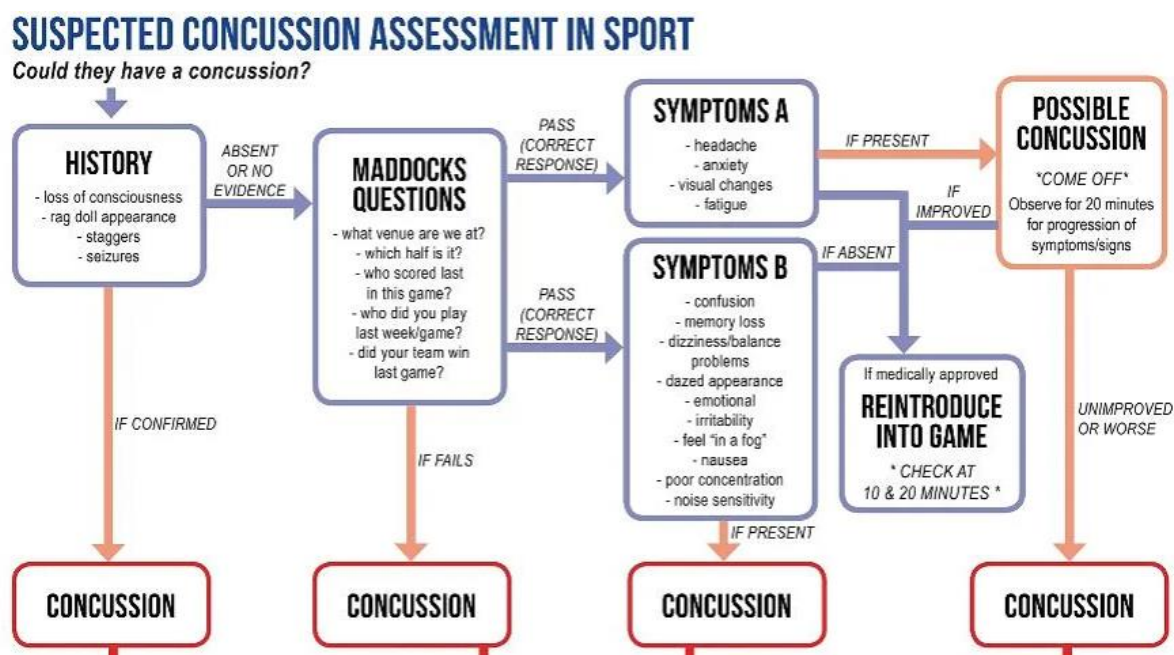
Table B: Sports-related concussion hospitalisations, by age groups in Australia 2020-21

Sport or activity	Life-stage age group						Total
	0-4	5-14	15-24	25-44	45-64	65+	
Australian Rules Football	0	150	258	69	3	1	481
Rugby	0	145	250	63	3	0	461
Soccer	2	52	114	48	11	0	227
Touch football	0	11	8	2	0	0	21
Other & unspecified football	0	42	80	24	0	0	146
Basketball	0	35	39	13	3	0	90
Netball	0	12	20	12	1	0	45
Cricket	0	12	13	11	2	0	38
Hockey (all types)	0	4	16	12	1	0	33
Swimming and diving	0	11	4	2	6	0	23
Surfing	0	6	3	8	7	1	25
Skiing, ice skating and snowboarding	0	10	7	7	3	1	28
Recreational walking	1	0	3	7	6	10	27
Dancing	1	2	1	2	2	1	9
Racquet sports	0	6	0	1	2	4	13
Combative sports	0	6	14	17	1	0	38
Equestrian activities	1	46	68	57	33	6	211
Wheeled motor sports	0	72	83	49	23	2	229
Cycling	6	174	104	102	71	39	496
Roller sports	5	104	65	22	6	1	203
Running, athletics, track & field	0	14	3	7	3	1	28
Other and unspecified	5	65	62	34	25	13	204
Total	21	979	1215	569	212	80	3,076

Source: AIHW National Hospital Morbidity Database.

What are the Signs and Neurological Effects Of Concussions?

After a concussion, some people have symptoms that last for weeks or even months and years. These problems can include trouble remembering things, difficulty concentrating, mood swings, personality changes, headaches, feeling very tired, dizziness, feeling very sleepy, and having trouble sleeping at night. This is called post-concussive syndrome. Depending on the location and severity of the head injury, it can cause damage to the vestibular system which can make you feel nausea and vomiting.



Source: Adelaide Concussion Clinic

If you are affected by this brain injury too many times it can cause Chronic Traumatic Encephalopathy (CTE). This causes the death of the nerve cells in the brain, known as degeneration. CTE gets worse over time.

What are current practices of minimising concussions in sports in Australia?

- Consciously try to avoid any contact to the head with other athletes, head-to-head, foot to head, arm to head or elbow to head collisions that could be fatal for all athletes involved in the act.
- Athletes wear the right equipment your sport demands, such as helmets, mouth guards, head guards etc, however, this is not compulsory in many sports with high concussion rates e.g. footy, rugby, soccer etc.
- The equipment worn should be worn properly, fit properly and be well maintained to get the most protection from it.
- If suffered with a head injury midgame, be taken off the field and be checked up by a physician or a doctor.

What else can be done?

Everyday technology is getting better, and many sports equipment designers are making better equipment to prevent these head injuries. In my view,

- ✓ Introducing soft, flexible mould colourful helmets could be more attractive to athletes and help head injuries. These helmets, made of impact-absorbing materials, provide protection while maintaining the agility required in these sports.
- ✓ Similar to some sports like cricket and baseball, making helmets a mandatory requirement in high impact sports such as footy, rugby, soccer etc can reduce high concussion rates and protect athletes better.
- ✓ Another idea that I would love is a smart helmet that develop algorithms that use the data collected by the helmet to predict injury risk based on the history of impacts and biometrics, providing early warnings to players and coaches. These algorithms can create personalized safety protocols and recommendations for each athlete based on their unique data.
- ✓ All children should be taught about concussions in programs at school. Even a minor fall in the school yard can cause concussion so it would be essential for children to learn about the symptoms for this injury as it also has many long-term effects.

Conclusion

In conclusion, head injuries in sports can be serious, but there are many ways to prevent them by using the right equipment by athletes of all ages. It's also important to take care of our mental health, as even famous athletes can feel very sad or worried. Staying active, talking to friends and family, and getting help from doctors can make a big difference. By taking care of both our bodies and minds, we can enjoy sports safely and happily.

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Word Count

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