Cardiac Screening Policy

Policy Author and
Contact person for more information:

Chief Medical Officer

Policy endorsed by OEC.

Policy approved by Board.

CEO: _____
(signature)

Next formal review by OEC:
September 2020

NOTE: Any agreed changes to the Policy approved by the OEC and/or Board between the date of issue and the date for next review are to be updated and made available to all staff for advice.

1. Purpose

1.1 This policy outlines a procedure for cardiac screening and follow-up of potential issues for NSWIS athletes, to minimise the risk of sudden cardiac death
Note: as per the NSWIS Medical Policy, an 'NSWIS athlete' refers to all agreement holders (scholarship, talent, training) whose primary DTE is NSWIS (sport training venue and/or gym).

2. Background

2.1 Sudden cardiac death (SCD) is usually defined as death within 1 hour of onset of symptoms and with no prior diagnosis of cardiovascular abnormality

2.2 The incidence of SCD in the general population >35 years of age is approximately 100 per 100,000 / year, whilst in those <35 years of age it is much lower at approximately 0.3-3.6 per 100,000 / year, and more prevalent in males, African American and indigenous Australian athlete populations

2.3 While the overall risk for athletes is extremely low, there is an increased relative risk for athletes during high-intensity training and competition of 2.8x compared with a non-athlete group. However, this increase occurs only in athletes with underlying (silent) cardiac disease. It is proposed that the release of catecholamines, increased platelet aggregation and adhesion, dehydration, electrolyte imbalance and possibility of concomitant use of drugs (pseudoephedrine) and doping (anabolic agents, HGH and EPO) may interact with an underlying cardiac abnormality to precipitate a fatal arrhythmia

2.4 Causes of sudden cardiac deaths in athletes <35 years of age:

- hypertrophic cardiomyopathy -HCM
- arrhythmogenic right ventricular cardiomyopathy -ARVC
- dilated cardiomyopathy
- anomalous coronary artery
- ion channelopathies – long QT, Brugada syndrome
- Marfan's disease
- myocarditis
- valvular heart disease
- chest wall trauma

2.5 Relative frequencies of SCD causes vary between countries with HCM most common in the USA (30% of SCD) and ARVC more common in Italy (22% of SCD)

2.6 There is increasing evidence to suggest that the pre-participation screening of athletes with an ECG test, in addition to a clinical assessment, significantly improves the chances of identifying potentially lethal heart disorders and provides an opportunity for effective treatment recommendations to minimise the risk of SCD.

3. Policy

3.1 Annual NIN medical screening for NSWIS athletes include cardiac history and physical examination as per the American Heart Association (AHA) guidelines

3.2 Cardiac ECGs should be performed as part of the scholarship/talent entry medical screening for athletes, regardless of age and then repeated every second year between ages 16 - 25 (due to the nature of the maturing heart) and reported by a cardiologist

3.3 Where an ECG or NIN medical screen identifies a positive result for a potential abnormality, the NSWIS Medical Director will review the result in accordance with the Seattle Consensus Statement and direct appropriate follow-up investigations and management which may include:

- Repeat ECG
- Echocardiogram
- Holter monitor
- Referral to a cardiologist with expertise in the field of sports cardiology.

3.4 All athletes with a history of SCD in a first degree relative should be referred to a cardiologist for further investigation (captured through the NIN medical screening).

3.5 Where cardiologist follow-up leads to a recommendation that there is a high risk of sudden cardiac death if an athlete continues to train or compete, the NSWIS Medical Director will discuss with the athlete and NSO Chief Medical Officer and provide advice to the NSWIS CEO.

3.6 The screening ECG will be funded by NSWIS, with subsequent follow-up at the cost of the athlete, although consideration will be given to use of discretionary support in case of financial hardship by the athlete.

3.7 In all cases the primary consideration is the welfare of the athlete.

4. Review and Revision

This policy, and all related appendices, will be reviewed as it is deemed appropriate, but no less frequently than every 24 months.

Policy review will be undertaken by the Medical Director.

Revision History

Date	*Version*	*Reviewed by*	*Changes made*
19 Jul 2018	1.1	Medical Director	Policy updated

Appendix 1 – International Perspective on Importance of ECGs

From an Australian perspective, there is difficulty in providing recent statistics on the prevalence of incidences and causes across the Australian population. As such international figures provide a guide on prevalence and appropriate practice for ECG inclusion:

- International Olympic Committee (IOC) Consensus Statement 2009 states that "ECG screening is recommended" for athletes and reaffirmed the importance of cardiac review in pre-participation and periodic health review. The paper reaffirmed the role of clinical assessment and outlined the elements to be included in history and examination, stating "it has been demonstrated that adding an ECG examination to history and physical examination results in a substantial increase in the ability to identify potentially lethal heart disorders".

- The Australasian College of Sports Physicians (ACSP) Position Statement Pre-Participation Cardiac Evaluation in Young Athletes re-affirms the well-known position that "for the vast majority of young individuals, regular exercise is not only safe but should be encouraged. However, there is a very small proportion of the population with pre-existing cardiac pathology, where participation in competitive sport may increase their risk of a significant cardiac event. The ACSP recommends using a process consisting of history, examination and resting 12 lead ECG".

- American Heart Association (AHA) and American College of Cardiology guidelines states "screening with 12-lead ECGs (or echocardiograms) in association with comprehensive history-taking and physical examination to identify or raise suspicion of genetic/congenital and other cardiovascular abnormalities". "If undertaken, such initiatives should recognize the known and anticipated limitations of the 12-lead ECG as a population screening test, including the expected frequency of false-positive and false-negative test results, as well as the cost required to support these initiatives over time".

  "The potential benefit of such initiatives is the identification of a small number of people with potentially lethal genetic or congenital cardiovascular diseases (e.g., hypertrophic cardiomyopathy) so that (1) they may be withdrawn from competitive sports to decrease their personal risk and generally make the athletic field a safer environment, and (2) in the process, some high-risk people may be recognized who may be candidates for disease-modifying medical or surgical intervention, or for prevention of sudden death with implantable defibrillators".

- European Society of Cardiologists: Recommends "screening all young competitive athletes with a complete history and physical (H&P) and 12-lead ECG".

- The Baker IDI Heart & Diabetes Institute supports "cardiac screening using 12-lead electrocardiography in sporting groups as a means of identifying people at high risk of sudden cardiac death where practical and affordable, although it is acknowledged that there are some limitations with ECGs. A study of young Italian male athletes has shown that sudden cardiac death among young athletes was more than 5 times as high compared to non-athletes per year per 100,000 people" (Corrado et al 2006).

- Seattle Consensus Statement 2017: international criteria for electrocardiographic interpretation in athletes' states "Sudden cardiac death (SCD) is the leading cause of mortality in athletes during sport. A variety of mostly hereditary, structural or electrical cardiac disorders are associated with SCD in young athletes, the majority of which can be identified or suggested by abnormalities on a resting 12-lead electrocardiogram (ECG)." "Each revision of the ECG standards has improved specificity while maintaining the sensitivity for ECG-detectable pathological conditions associated with SCD." "Effective use of ECG in the cardiovascular care of athletes requires that abnormal findings receive appropriate secondary investigations to confirm or exclude conditions associated with SCD".

Other major Australian sporting codes are divided in their recommendations. Those mandating ECG screenings include Rugby (ARU) and Rowing Australia:

- The ARU requires athletes to sign a consent form for cardiac screening, but mandates that an ECG should be undertaken. While not explicitly stated, it could be inferred that a player's refusal to undergo this examination could lead to an expulsion from the team.

- Rowing Australia states that all members of Australian Junior, U21, U23, and Senior Teams undergo pre-competition screening consisting of history, examination and ECG. There is no mention of consent, but "education should be provided to athletes prior to the health screening regarding the process and its implications."

REFERENCES

Corrado D, Basso C, Pavei A, Michieli P, Schiavon M, Thiene G. Trends in sudden cardiovascular death in young competitive athletes after implementation of a 27-36 preparticipation screening program. JAMA 2006; 296:1593–1601.