LSKVC Return to Play (Outdoor) Risk Assessment

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Motivation

This document sets out the analysis undertaken in the organisation of LSKVC outdoor volleyball sessions, returning from the COVID19 hiatus. Its overarching aim is to provide means to reduce the risks of virus propagation, protecting our members and the general population and create the start of a sustainable way to play volleyball during the ongoing pandemic.

The **Risk Assessment** outlines the specific risk assessment for our activity on top of the Volleyball England Risk Assessment which is generic (references to the Volleyball England documents are at the end of that section).

The Risk Assessment is based on:

- Volleyball England Return to Outdoor Volleyball Specific Action Plan (link)
- Return to recreational team sport framework (link)
- Attendance to VE Webinar Return to Volleyball held on 06/08/20.

This Risk Assessment was used to inform the aspects of the **Players Rules** and **Club Requirements** which were specific to our park play activity. Those documents should be read alongside this one.

The **Players Rules** document is available at *https://github.com/cuisquare/ReturnToOutdoorVolleyball /blob/master/LSKVC_ParkPlay_PlayersRules.pdf*.

The **Club Requirements** document is available at *https://github.com/cuisquare/ReturnToOutdoorVolleyball/blob/master/LSKVC_ParkPlay_ClubRequirements.pdf*.

1 Quantitative Risk Assessment Matrix

Table 1: Risk Assessment Park Play

Hazard	Persons Affected	Before			Controls	After		
		L	S	R		L	S	R
Transfer of virus to at risk population for covid (elderly, underlying health condition)	• Athletes • Public	3	5	15	• No athlete to take park who is part of at risk population • No athlete to take part who has regular non socially distant (partner, bubble member) contact with at risk population	1	5	5
Transfer of virus via equipment used in session	• Athletes • Public	3	4	12	• No athlete to take park who displays any symptom of covid (persistent cough, fever, loss of smell (see gvt page for more symptoms)) • Cleaning and wiping down all equipment with sanitiser before and after each played sets • Athletes to apply hand sanitiser before and after each played sets • Having a limited number of balls to reduce overall risk of transfer	2	4	8
Transfer of virus as a result of increased interaction between athletes	• Athletes • Public	3	4	12	• Athletes to avoid all unnecessary contact such as handshakes or hand slaps • Athletes to apply hand sanitiser before and after each played sets • Athletes to avoid sharing all personal equipment (drinking bottles, therabands, towels etc.) • Athletes to socially distance when not playing. • Athletes to keep their belongings at least two metres apart.	2	4	8
Transfer of virus as a result of increased interaction between playing and non playing session member	• Athletes • Public	3	4	12	• Limit number of people in session to 26 • Include any non athlete watching (partners, friend) game in total number • If max number is reached only with athlete, non athlete will not be allowed to attend • Non playing attendants and athlete not playing to social distance and stay 2m away from playing area	2	4	8

Table 1: Risk Assessment Park Play *(continued)*

Hazard	Persons Affected	L	S	R	Controls	L	S	R
• Virus acquisition during play due to the accumulation of close proximity duration created by the activity. • Increased exposure due to play being scrappier in park compared to competitive game as used in Volleyball England to demonstrate exposure duration constitutes medium risk	Athletes	3	4	12	• Carry out conservative Aanalysis on likely exposure duration (see Virus Exposure Analysis) with Analysis to factor in specifics of activity such as the court size, number of players per team with safety factor added - DONE • Reduce the total duration of play corresponding to an acceptable risk of virus exposure from accumulated proximity DONE • Carry out observation of play to determine actual likely exposure and revise propose max duration for the activity accordingly TO BE CARRIED OUT	2	4	8
Transfer of virus from athletes to general public	Public	3	4	12	• Atheltes to social distance at all times when not playing • Athletes to social distance and follow gvt transport guidelines (e.g. wearing mask in public transport) when traveling to and from the venue	2	4	8

2 Risk Assessment Approach

2.1 Definitions

2.1.1 Hazards

Hazards are events which should they occur would result in damage to people or property.

2.1.2 Likelihood (L)

Describes how likely it is for the hazard to happen. Rated between 1 and 5, with the following definitions for each level:

1. **Very unlikely** to happen
2. **Unlikely** to happen, but not by any means impossible
3. **Likely** to happen, and would not be totally unexpected
4. **Very likely** to happen, and would be at all unusual
5. **Certain** to happen

2.1.3 Severity (S)

Describes the consequences of the hazard should it happen. Rated between 1 and 5, with the following definitions for each level:

1. No injury, ill health or damage
2. Minor injury or minor ill health complaint, no time lost. Minor property damage or minor environmental incident.
3. Lost time injury, up to and including reportable injury to the HSE with over seven days time lost, but not as a specified injury, Some risk of immediate or long-term health issues.
4. Specified injury, long-term absence or significant risk that could lead to immediate or long-term health illness, including reportable disease.
5. Fatal accident or multiple specified injuries.

2.1.4 Risk (R)

The corresponding Risk (R) of the Hazard is evaluated by the product S*R. An acceptable residual Risk should be 8 or below. Any activity with higher risk should be stopped until further controls are put into place so the risk reaches an acceptable level.

2.1.5 Controls

Those are measures put into place resulting in terms of organisation or rules for participants which result in a lower residual Severity and/or Likelihood.

2.2 Approach and Choices Made

Hazards are identified and after consideration a Likelihood (L) of occurrence and Severity (S) should they occur is attributed Before and After Controls are put in place. Results are summarised in a Quantitative Risk Assessment Matrix (see above).

In our specific Risk Assessment, the overarching Hazard considered is the acquisition of the covid virus by any person through various vectors as a result of the Volleyball Activity. Therefore, it was considered that it is not possible to reduce the inherent Severity for a specific population. The controls focus on reducing the Likelihood of the Hazard occuring.

We considered the Severity of covid infection to be a minimum of 4 for the general population with no known underlying condition, and 5 for the at-risk population (elderly, underlying health condition). Hazard with Severity of 5 were dealt with by barring all access to the activity resulting in a Likelihood of 1.

3 Virus Exposure Analysis

3.1 Background

We are looking to adapt the measures from the ones outlined by the return to sport document as a minimum, to one that compensate for aspects of our play that differs from the conditions under which the analysis was made. VE analysis was ran as mandated by gvt Return to Sport. See references for links to those.

VE study concluded that a normal volleyball game of 6v6 on a 9 by 9 metres court would result in a 1 minutes per 20m set virus exposure for each player, totaling 5 minutes exposure for a full 5 sets game. This was used to justify the exposure risk as being medium as defined by Return to Sport. This approach was accepted and validated by the sport governing body. We have based the risk assessment in the play configurations required to attain a similar level of exposure to the virus as the one in the study.

3.2 Method

An estimation of the virus exposure is derived as a function of the court size, number of players per team and set duration. VE Study was for 6v6 game in a 9 metres x 9 metres court. Basically if the court gets smaller, or the number of players increases, then the exposure increases.

A reference weighted exposure r_e^* is derived by considering duration of exposure per duration of playing time per player per court surface. The values for the Volleyball England study were an exposure time $Te^* = 1min$ per set of $Tplay^* = 20min$. The court side was $L^* = 9m$ and the number of players per team was $N_{team}^* = 6$.

$$r_e^* = \frac{T_e^*}{T_{play}^* \frac{N_{team}^*}{L^{*2}}}$$

To obtain the duration of exposure Te for our specific park activity, we multiply the reference weighted exposure by the parameters corresponding to our specific activity : T_{play} play duration in minutes, court side L in metres and N_{team} the number of players per team.

We also multiply that exposure time by a safety factor equal to 1.5 to account for a scrappier play in the park compared to what was obtained the in VE study which was quoted in the webinar held on 06/08 to be national league finals games.

$$T_e = T_{play} \frac{N_{team}}{L^2} r_e^* S_f$$

Obviously this choice constitutes an educated guess, and the actual exposure time should be validated by observation of typical park play which is an exercise that has not been carried out so far.

Example 1: in the case of a 6v6 play on a 9mx9m court, for a set duration of 15 minutes, the exposure will be $Te^* = 0.75$ minutes - the exposure is a bit less than the VE reference of 1 minute because the set is shorter, everything else being equal.

Example 2: in the case of a 6v6 play on a 8mx8m court, for a set duration of 20 minutes, the exposure will be $Te^* = 1.27$ minutes - the exposure is a bit larger than the VE reference of 1 minute because the court is smaller, everything else being equal.

Example 3: in the case of a 6v6 play on a 8mx8m court, for a set duration of 20 minutes, safety factor of 1.5, the exposure will be $Te^* = 1.9$ minutes - the exposure is larger than Example 2 because the play is scrappier, everything else being equal.

Based on this it is possible to calculate the maximum advisable number of sets per player depending on the chosen acceptable virus exposure per session.

$$N_{set}^{max} = \frac{T_e^{max}}{T_{set} \frac{N_{team}}{L^2} r_e^* S_f}$$

Example 1 (continued): in the case of a 6v6 play on a 9mx9m court, for a set duration of 15 minutes, the maximum number of sets per player will be $N_{set}^{max} = 6.67$ sets. This is a bit more than the 5 sets in the VE reference because the sets are shorter, everything else being equal.

Example 2 (continued): in the case of a 6v6 play on a 8mx8m court, for a set duration of 20 minutes, the maximum number of sets per player will be $N_{set}^{max} = 3.95$ sets. This is a bit less than the 5 sets in the VE reference because the court is smaller, everything else being equal.

Example 3 (continued): in the case of a 6v6 play on a 8mx8m court, for a set duration of 20 minutes, safety factor of 1.5, the maximum number of sets per player will be $N_{set}^{max} = 2.63$ sets. This is less than Example 3 because the play is scrappier, everything else being equal.

As a default in this risk assessment, the acceptable total exposure per session was considered to be **10 minutes**. This compares to the value of *5 minutes* measured for the VE study and *15 minutes* for the Return to Sport maximum for a Medium risk.

The rationale for that choice is that we want to remain under the value mandated by government for a medium risk (as this is a requirement of return to sport) with some allowance.

It is necessary that the N_{set}^{max} is obtained from the results table below and enforced either organically by a careful choice of session duration and numbers cap or by monitoring as an alternative.

3.3 Results

Below are tables giving N_{set}^{max} (and noted NSM) using the method above for a few choices of number of players per team, number of courts, set duration.

Please use the column NSM for the maximum recommended number of sets per player for each configuration.

3.3.1 Definitions

Table 2: Acronyms

Abbrevation	Definition
CaseDesc	Cases Description
LC	court length (metres) - Input
NTM	Nb players per team - Input
DS	Set duration (minutes) - Input
SF	Safety Factor
ET	Max Session Virus Exposure (minutes) - Input
NTT	Nb players total - Input
NC	Nb courts - Input
ES	Set Virus Exposure (minutes) - Calculated
NSM	Max Number of Sets - Calculated
DP	Playtime duration per player - Calculated
DS	Session duration (no breaks) - Calculated

3.3.2 30 players

Table 3: Park Play Configurations - 30 players

CaseDesc	Inputs							Ouputs			
	LC	NTM	DS	SF	ET	NTT	NC	ES	NSM	DP	DS
LSKVC 4X4 20m 10exp	8	4	20	1.5	10	30	2	1.3	7.9	2h38m	4h56m
LSKVC 5X5 20m 10exp	8	5	20	1.5	10	30	2	1.6	6.3	2h06m	3h10m
LSKVC 5X5 20m 10exp	8	5	20	1.5	10	30	1	1.6	6.3	2h06m	6h19m
LSKVC 6X6 20m 10exp	8	6	20	1.5	10	30	2	1.9	5.3	1h45m	2h12m
LSKVC 6X6 20m 10exp	8	6	20	1.5	10	30	1	1.9	5.3	1h45m	4h23m

3.3.3 24 players

Table 4: Park Play Configurations - 24 players

CaseDesc	Inputs							Ouputs			
	LC	NTM	DS	SF	ET	NTT	NC	ES	NSM	DP	DS
LSKVC 4X4 20m 10exp	8	4	20	1.5	10	24	2	1.3	7.9	2h38m	3h57m
LSKVC 5X5 20m 10exp	8	5	20	1.5	10	24	2	1.6	6.3	2h06m	2h32m
LSKVC 5X5 20m 10exp	8	5	20	1.5	10	24	1	1.6	6.3	2h06m	5h03m
LSKVC 6X6 20m 10exp	8	6	20	1.5	10	24	2	1.9	5.3	1h45m	1h45m
LSKVC 6X6 20m 10exp	8	6	20	1.5	10	24	1	1.9	5.3	1h45m	3h31m

3.3.4 12 players

Table 5: Park Play Configurations - 12 players

CaseDesc	Inputs							Ouputs			
	LC	NTM	DS	SF	ET	NTT	NC	ES	NSM	DP	DS
LSKVC 4X4 20m 10exp	8	4	20	1.5	10	12	1	1.3	7.9	2h38m	3h57m
LSKVC 5X5 20m 10exp	8	5	20	1.5	10	12	1	1.6	6.3	2h06m	2h32m
LSKVC 6X6 20m 10exp	8	6	20	1.5	10	12	1	1.9	5.3	1h45m	1h45m

3.3.5 8 players

Table 6: Park Play Configurations - 8 players

CaseDesc	Inputs							Ouputs			
	LC	NTM	DS	SF	ET	NTT	NC	ES	NSM	DP	DS
LSKVC 4X4 20m 10exp	8	4	20	1.5	10	8	1	1.3	7.9	2h38m	2h38m

3.3.6 All configurations

Table 7: Park Play Configurations - All

CaseDesc	Inputs							Ouputs			
	LC	NTM	DS	SF	ET	NTT	NC	ES	NSM	DP	DS
VE STUDY 6X6 20m 5exp	9	6	20	1.0	5	12	1	1.0	5.0	1h40m	1h40m
LSKVC 4X4 20m 10exp	8	4	20	1.5	10	8	1	1.3	7.9	2h38m	2h38m
LSKVC 4X4 20m 10exp	8	4	20	1.5	10	12	1	1.3	7.9	2h38m	3h57m
LSKVC 4X4 20m 10exp	8	4	20	1.5	10	24	2	1.3	7.9	2h38m	3h57m
LSKVC 4X4 20m 10exp	8	4	20	1.5	10	30	2	1.3	7.9	2h38m	4h56m
LSKVC 5X5 20m 10exp	8	5	20	1.5	10	12	1	1.6	6.3	2h06m	2h32m
LSKVC 5X5 20m 10exp	8	5	20	1.5	10	24	2	1.6	6.3	2h06m	2h32m
LSKVC 5X5 20m 10exp	8	5	20	1.5	10	30	2	1.6	6.3	2h06m	3h10m
LSKVC 5X5 20m 10exp	8	5	20	1.5	10	24	1	1.6	6.3	2h06m	5h03m
LSKVC 5X5 20m 10exp	8	5	20	1.5	10	30	1	1.6	6.3	2h06m	6h19m
LSKVC 6X6 20m 10exp	8	6	20	1.5	10	12	1	1.9	5.3	1h45m	1h45m
LSKVC 6X6 20m 10exp	8	6	20	1.5	10	24	2	1.9	5.3	1h45m	1h45m
LSKVC 6X6 20m 10exp	8	6	20	1.5	10	30	2	1.9	5.3	1h45m	2h12m
LSKVC 6X6 20m 10exp	8	6	20	1.5	10	24	1	1.9	5.3	1h45m	3h31m
LSKVC 6X6 20m 10exp	8	6	20	1.5	10	30	1	1.9	5.3	1h45m	4h23m

First line is the case reproducing the results obtained from measurement by Volleyball England which validates the formula used as we obtained 1 minute exposure per set of 20 minutes. The rest are cases calculated specifically for our purpose of park play.

3.4 References

Analysis/return to sport doc link

Volleyball England Risk assessment link

Volleyball England Return to sport webinar link tbc

Return to Sport Guidance link