

American Youth Circus Organization/American Circus Educators Association  
**A Basic Guide to Risk Assessment/Risk Reduction**

## **Introduction**

Risk Assessment/Risk Reduction (RA/RR) is a set of practices aimed at helping to manage the risks and hazards inherent in a wide range of activities, including but not limited to circus and other acrobatic training and performance. It is increasingly considered to be an essential part of the work to be done in planning and implementing such activities.

This document provides very basic guidance, with the intention to encourage and promote the wide adoption of RA/RR in circus work. *RA/RR is not rocket science, and should not be seen as scary, burdensome, or a bureaucratic imposition.* Rather, it is something that is easily taken on, and can become a valuable tool for all youth and adult circus practitioners. It should become a routine part of our workflow, and a way of looking at and thinking about what we are doing. At its most basic, it helps us to know when something we are doing involves hazardous conditions resulting in potential risks that should be mitigated or eliminated.

While there is no single mandated form that RA/RR must take, and while academic libraries (and Google searches) are filled with books and references, the basics are simple. Feel free to dig deeper, and to modify the approach presented here to fit your needs.

## **Key Definitions (from ANSI E1.43 – 2016: Performer Flying Systems)\***

2.41 Risk Assessment (RA): The process of identifying, evaluating, and quantifying the potentially hazardous conditions, severity, and probability of occurrence of harm.

2.42 Risk Reduction (RR): Mitigation of risk created by hazardous conditions.

2.43 Risk Assessment / Risk Reduction (RA/RR): The cyclical process of identifying risk, mitigating risk, evaluation of residual risk, and repeating the process until the risk has been reduced to an acceptable level.

(For further elaboration and discussion of practices related to these terms, see ANSI E1.43, Section 4.3.2., and the associated Appendix section A.4.3.2.1.)

## **Here's How to Start: The Four Questions**

1) *What could possibly go wrong?*

This is a brainstorming exercise through which we **make a list of potential risks and hazards** in our situation. Take the time to look beyond the obvious, and use your common sense and experience. Make it a thoughtful and thorough list.

Then, **for each of the risks you have identified**, ask the following questions:

2) *What would be the **severity** of the consequences if it did?*

Think through the **severity** of the result if the bad thing happens. In particular, would it result in serious injury? On a scale of 1 through 5, rate the severity of the potential consequences, with 1 being trivial, and 5 being death.

3) *What is the **likelihood** of it occurring?*

Rank the **likelihood** of the bad thing happening, again on a scale of 1-5, with 1 being highly unlikely (like a comet landing on the site) and 5 being nearly certain (like someone tripping over a loose extension cord in the dark).

With this information, it is helpful to plug the numbers into a grid like this one:

**Sample Risk Assessment Table**

		Severity				
		Insignificant (1)	Minor (2)	Moderate (3)	Major (4)	Extreme (5)
Probability	Very Unlikely (1)	1	2	3	4	5
	Unlikely (2)	2	4	6	8	10
	Possible (3)	3	6	9	12	15
	Probable (4)	4	8	12	16	20
	Very Likely (5)	5	10	15	20	25

Low risk     1 – 3  
 Moderate risk   4 – 8  
 High risk     9 – 14  
 Extreme risk 15 – 25

We can see that hazard with a low probability and trivial consequences will end up toward the Green (Go) part of the grid, while those with high probability and bad consequences will end up toward the Red (STOP) zone. This process helps us to identify what we need to pay attention to.

Note that the assignment of green, yellow, and red values is a function of situational judgment about what levels of risk are acceptable. This will vary, and may even vary within a given scenario. For example, we may decide that a risk in the yellow range is acceptable for a trained professional performer, while at the same time considering such a risk to be unacceptable for a child, student, or audience member.

For those hazards that fall into zones of unacceptable risk, we move to the next question:

4) What can/should we do to **mitigate or eliminate** the risk?

Identify and select actions that will **reduce or eliminate the hazard**, which would move it toward or into the green. These may take the form of operational or equipment changes to eliminate the risk completely. They may also involve actions to help avoid bad consequences. For example, an identified risk of failure on a particularly vulnerable piece of hardware may lead to a mitigating action of increased frequency of inspection of that element. Finally, RA/RR needs to consider actions to be taken in response to something bad happening, as a way of mitigating the consequences. *Having an effective emergency response plan that relates to identified risks is always a critical piece of the puzzle.*

Once the four questions have been asked and answered, it is essential to run through the cycle again, with a particular focus on making sure that the mitigation actions taken have not created new risks or unforeseen consequences. We are done when we have implemented the identified changes, and all of the identified risks fall within an acceptable zone. Then, when something changes, we run the exercise again.

### **The Bottom Line**

The American National Standard for aerial performance (ANSI E1.43 – 2016) referred to above requires that “formal” RA/RR be conducted whenever a performer flying effect is planned.

Fundamentally, this boils down to the following:

- 1) Ideally, more than one competent person should participate in the exercise.
- 2) The results of the process should be written down or otherwise documented.
- 3) The process should continue cyclically until the participants determine that an acceptable level of risk has been achieved.

If we do these things, and do them regularly, we are on the way toward building and maintaining a culture that prioritizes safety in practical terms. So whether or not the particular activity we are engaged in falls within the specific scope of the ANSI standards or other legal, regulatory, or insurance company mandates, the RA/RR process can be a valuable tool.

*JANUARY 9, 2020  
Jonathan Deull, ACE Safety Committee*

*The attached **Sample Risk Assessment/Risk Reduction Template** may be used or adapted to meet your needs.*

\* ANSI Standards relating to the live entertainment industry are available for free download from the ESTA website thanks to the sponsorship of Prosight Specialty Insurance.  
[https://tsp.esta.org/tsp/documents/published\\_docs.php](https://tsp.esta.org/tsp/documents/published_docs.php)

## Sample Risk Assessment/Risk Reduction Template

Program Name: \_\_\_\_\_ Date: \_\_\_\_\_

		Severity				
		Insignificant (1)	Minor (2)	Moderate (3)	Major (4)	Extreme (5)
Probability	Very Unlikely (1)	1	2	3	4	5
	Unlikely (2)	2	4	6	8	10
	Possible (3)	3	6	9	12	15
	Probable (4)	4	8	12	16	20
	Very Likely (5)	5	10	15	20	25

Low risk     1 – 3  
 Moderate risk   4 – 8  
 High risk     9 – 14  
 Extreme risk 15 – 25

Activity	Hazards	Risks	Risk Value Before Mitigation			Mitigation Actions Implemented	Risk Value After Mitigation
			Probability (1-5)	Severity (1-5)	Risk Level (1-25)		
<b>SIMPLIFIED EXAMPLE:</b> Jane's Lyra performance	<ul style="list-style-type: none"> <li>Operators let go of rope</li> <li>Jane falls off lyra</li> <li>Conflict with other rigging</li> </ul>	<ul style="list-style-type: none"> <li>Performer Injury</li> <li>Operator Injury</li> <li>Equipment Damage</li> </ul>	3	4	12	<ul style="list-style-type: none"> <li>Pre-show function check</li> <li>Multiple operators</li> <li>Operator training</li> <li>Rehearsal</li> <li>Emergency/Rescue plan</li> </ul>	8

Name of Person who conducted the assessment	Signature	Date
Name of Person who conducted the assessment	Signature	Date

Name of Person who conducted the assessment	Signature	Date