Title 29: Labor

PART 1910 OSHA

Subpart O Machinery and Machine Guarding

(These are not specifically for exercise equipment but we would be able to use these as guidelines. Definition of a pinch point)

(44) *Pinch point* means any point other than the point of operation at which it is possible for a part of the body to be caught between the moving parts of a press or auxiliary equipment, or between moving and stationary parts of a press or auxiliary equipment or between the material and moving part or parts of the press or auxiliary equipment.

(Distances that guards need to be from pinch point hazards and their maximum width of opening. These are for production equipment. We should be able to use these for our guide lines as to how our guards should be fitted.)

[In inches] Table O-10 (FCR)

Distance of opening from point of operation hazard	Maximum width of opening
1/2 to 1 ½	1/4
1 1/2 to 2 ½	3/8
2 1/2 to 3 ½	1/2
3 1/2 to 5 ½	5/8
5 1/2 to 6 ½	3/4
6 1/2 to 7 ½	7/8
7 1/2 to 12 ½	1 1/4
12 1/2 to 15 ½	1 1/2
15 1/2 to 17 ½	1 7/8
17 1/2 to 31 ½	2 1/8

This table shows the distances that guards shall be positioned from the danger line in accordance with the required openings.

(These are requirements for guarding production machinery. These rule should apply to guards on our project.)

§ 1910.212 General requirements for all machines.

(a) *Machine guarding* —(1) *Types of guarding.* One or more methods of machine guarding shall be provided to protect the operator and other employees in the machine area from hazards such as those created by point of operation, ingoing nip points, rotating parts, flying chips and sparks. Examples of guarding methods are—barrier guards, two-hand tripping devices, electronic safety devices, etc.

(2) *General requirements for machine guards.* Guards shall be affixed to the machine where possible and secured elsewhere if for any reason attachment to the machine is not possible. The guard shall be such that it does not offer an accident hazard in itself.

(This applies to cut off wheals but may be interpreted to determine the thickness of the guards we will be designing for our machine.)

Table O–1—Minimum Basic Thickness for Peripheral and Side Members for Safety Guards Used With Cutting-Off Wheels

Material used in construction of guard	Maximum thickness of cutting off wheel	Speed not to exceed	Cutting off wheel diameters									
			6 to 11 inches		Over 11 to 20 inches		Over 20 to 30 inches		Over 30 to 48 inches		Over 48 to 72 inches	
			A	B	A	B	A	B	A	B	A	B
Structural steel (min. tensile strength 60,000 p.s.i.)	1/2 inch or less	14,200 SFPM	1/16	1/16	3/32	3/32	1/8	1/8	3/16	3/16	1/4	1/4
	1/2 inch or less	16,000 SFPM	3/32	1/8	1/8	1/8	3/16	1/8	1/4	3/16	5/16	1/4

(Looking at this we will need to plan on children using our design. We must foresee that children will be around our machine even if we intend it for adult use.)

§ 1200.2 Definition of children's product.

(2) The examples discussed herein may also be illustrative in making such determinations; however, the determination of whether a product meets the definition of a children's product depends on factual information that may be unique to each product and, therefore, would need to be made on a case-by-case basis. The term “for use” by children 12 years or younger generally means that children will physically interact with such products based on the reasonably foreseeable use of such product. Toys and articles that are subject to the small parts regulations at 16 CFR Part 1501 and in ASTM F963 would fall within the definition of children's product since they are intended for children 12 years of age or younger. Toys and other articles intended for children up to 96 months (8 years old) that are subject to the requirements at 16 CFR 1500.48 through 1500.49 and 16 CFR 1500.50 through 1500.53 would similarly fall within the definition of children's product given their age grading for these other regulations. Therefore, a manufacturer could reasonably conclude on the basis of the age grading for these other regulations that its product also must comply with all requirements applicable to children's products including, but not limited to, those under the Federal Hazardous Substances Act, ASTM F963, “Standard Consumer Safety Specification for Toy Safety,” and the Consumer Product Safety Improvement Act of 2008.

(b) *Definition of “General Use Product”* —(1) A general use product means a consumer product that is not designed or intended primarily for use by children 12 years old or younger. General use products are those consumer products designed or intended primarily for consumers older than age 12. Some products may be designed or intended for use by consumers of all ages, including children 12 years old or younger, but are intended mainly for consumers older than 12 years of age. Examples of general use products may include products with which a child would not likely interact, or products with which consumers older than 12 would be as likely, or more likely to interact. Products used by children 12 years of age or younger that have a declining appeal for teenagers are likely to be considered children's products.

(These are some good rules about bicycles. I would think they should apply to the equipment that we will be designing.)

Title 16

§ 1512.4 Mechanical requirements.

(a) *Assembly.* Bicycles shall be manufactured such that mechanical skills required of the consumer for assembly shall not exceed those possessed by an adult of normal intelligence and ability.

(b) *Sharp edges.* There shall be no unfinished sheared metal edges or other sharp parts on assembled bicycles that are, or may be, exposed to hands or legs; sheared metal edges that are not rolled shall be finished so as to remove any feathering of edges, or any burrs or spurs caused during the shearing process.

(c) *Integrity.* There shall be no visible fracture of the frame or of any steering, wheel, pedal, crank, or brake system component resulting from testing in accordance with: The handbrake loading and performance test, § 1512.18(d); the foot brake force and performance test, § 1512.18(e); and the road test, § 1512.18(p) (or the sidewalk bicycle proof test, § 1512.18(q)).

(d) *Attachment hardware.* All screws, bolts, or nuts used to attach or secure components shall not fracture, loosen, or otherwise fail their intended function during the tests required in this part. All threaded hardware shall be of sufficient quality to allow adjustments and maintenance. Recommended quality thread form is specified in Handbook H28, "Screw Thread Standards for Federal Service," [1] issued by the National Bureau of Standards, Department of Commerce; recommended mechanical properties are specified in ISO Recommendation R898, "Mechanical Properties of Fasteners," and in ISO Recommendations 68, 262, and 263, "General Purpose Screw Threads." [2]

[1] Copies may be obtained from: Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

[2] Copies may be obtained from: American National Standards Institute, 1430 Broadway, New York, New York 10018.

(e)-(f) [Reserved]