

Preparing for Winter Training

Running in the winter can cause some unique challenges. Cold injuries may occur if not properly educated on the risks of prolonged exposure to cold temperatures. The most common cold injuries include hypothermia and frostbite. In order to not let the cold weather impede your training during the winter months, it is imperative to know how to properly dress yourself for runs in cold weather, especially when increasing mileage (i.e. spending more time outdoors). Your body will heat up quickly when you start running, even when temperatures are low, which may make you very warm if over-dressed. This is why dressing in layers is extremely important. Conversely, your body will cool down quickly following your run and it is a good idea to bring a change of clothes to wear after your run if you are unable to immediately go home and take a nice, warm shower.

Proper clothing is key in prevention of cold injuries. The internal layer (layer of clothing closest to your body) should allow evaporation of sweat with minimal absorption such as a polyester or polypropylene material. This layer should transfer the moisture to your other layers of clothing so that it can then evaporate into the environment. The middle layer provides insulation against heat loss such as a wool or fleece material. The outer layer should be removeable and should be wind and water resistant, which allows for evaporation of moisture. Good features to look for in an outer layer are venting abilities such as zippers or mesh in the armpits and low back area which allow moisture to transfer from your inner layer to the environment. Toes, fingers, ears, and skin should be protected when wind-chill temperatures are in the range at which frostbite is possible in 30 minutes or less (refer to chart below to assess risk of frostbite at certain temperatures). Following your run it is imperative to remove wet clothing as soon as possible and replace with dry, clean items.

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Wind Chill Chart



		Temperature (°F)																	
		40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
Wind (mph)	Calm	36	31	25	19	13	7	1	-5	-11	-16	-22	-28	-34	-40	-46	-52	-57	-63
	5	34	27	21	15	9	3	-4	-10	-16	-22	-28	-35	-41	-47	-53	-59	-66	-72
	10	32	25	19	13	6	0	-7	-13	-19	-26	-32	-39	-45	-51	-58	-64	-71	-77
	15	30	24	17	11	4	-2	-9	-15	-22	-29	-35	-42	-48	-55	-61	-68	-74	-81
	20	29	23	16	9	3	-4	-11	-17	-24	-31	-37	-44	-51	-58	-64	-71	-78	-84
	25	28	22	15	8	1	-5	-12	-19	-26	-33	-39	-46	-53	-60	-67	-73	-80	-87
	30	28	21	14	7	0	-7	-14	-21	-27	-34	-41	-48	-55	-62	-69	-76	-82	-89
	35	27	20	13	6	-1	-8	-15	-22	-29	-36	-43	-50	-57	-64	-71	-78	-84	-91
	40	26	19	12	5	-2	-9	-16	-23	-30	-37	-44	-51	-58	-65	-72	-79	-86	-93
	45	26	19	12	4	-3	-10	-17	-24	-31	-38	-45	-52	-60	-67	-74	-81	-88	-95
	50	25	18	11	4	-3	-11	-18	-25	-32	-39	-46	-54	-61	-68	-75	-82	-89	-97
	55	25	17	10	3	-4	-11	-19	-26	-33	-40	-48	-55	-62	-69	-76	-84	-91	-98
60																			

Frostbite Times 30 minutes 10 minutes 5 minutes

Wind Chill (°F) = 35.74 + 0.6215T - 35.75(V^{0.16}) + 0.4275T(V^{0.16})
Where, T= Air Temperature (°F) V= Wind Speed (mph) Effective 11/01/01

Certain risk factors may increase your likelihood of sustaining a cold injury. Non-environmental risks for cold injuries include: previous cold injury, low body fat or muscle mass/lean body composition, females, black race, older age, lower fitness level, and presence of a comorbidity including exercise-induced bronchospasm, Raynaud's Syndrome, Anorexia Nervosa, or cardiovascular disease. Environmental factors, which are quite obvious, include low air temperature, humidity, rain, water immersion, limited thermal radiation, and wind. The threshold for dangerous wind chill conditions is typically below -18 degrees F as can be seen in the Wind Chill chart above.

Winter weather, including snow and ice, may impede your ability to maintain balance while running and increase your chance of slipping or falling. It is wise to slow down your running speed when running in inclement weather in order to decrease chance of injury.

Lastly, just as in high temperatures, proper hydration is key in the presence of cold weather as well. It is important to maintain proper hydration even when not thirsty, as the normal thirst mechanism is blunted with cold temperature.

If you have any additional questions, don't hesitate to ask one of the physical therapists from The Ohio State University Endurance Medicine Team. If you have questions about specific clothing/apparel or layering, Second Sole is a great resource for you!

As always, if you are experiencing pain that doesn't resolve or would like a Video Running Gait Analysis with one of our Endurance Medicine Team members, contact Ohio State University Sports Medicine at 614-293-7600 for priority scheduling.