

Appendix A Summary and Appraisal Tables

Study	N males	N female	Mean age	Suit	Exposure	Mean endurance time/Study Duration	Activity level	Fatigue	Mood	Psychomotor	Cognition	Anxiety	Perception	Vigilance	Memory	Task performance
Caldwell, 2012 (14)	8	0	27.1	NBC	48C 20%RH	1h 35m	Minimal				No Change				No Change	
Fine, 1985 (19)	0	17	22	NBC	32.8C, 61%RH		Minimal				Decreased		Decreased			Decreased
Fine, 1987 (18)	20	0	21	NBC	32.8C, 61%RH	4h 18m	Minimal				Decreased		Decreased			Decreased
Hamilton, 1982 (27)	12	12	24	NBC	29.05C	5h	Minimal		Decreased		No Change			No Change		
Hamilton, 1983 (26)	6	0	29	NBC	WBGT 19-23C	4h	Minimal	Increased	Decreased in females/ Increased in males		Decreased			Decreased		No Change
Johnson, 1997 (33)	Not Reported	Not Reported	Not Reported	NBC	35C 60% RH	4h				No Change				Decreased		
Kaufman, 1987 (36)	3	0	27.3	NBC	27.2C	8h	Minimal			Increased	No Change					
Kaufman, 1988 (35)	4	0	31.75	CAPS	33C 70%RH	2h 35m	Low			Increased	No Change					
Kelly, 1987 (37)	24	0	23	NBC	70C	6h	Minimal				No Change			Decreased		
Kobrick, 1985 (39)	24	0	Not Reported	NBC	35C 61%RH	8h	Minimal						Decreased			
Mitchell 1986 (41)	7	0	30	NBC	Ambient cockpit, not reported	6h	Minimal	Increased	Decreased		No Change			Decreased	No Change	No Change
Munro, 1987 (43)	48	0	23.5	NBC	30C 57% RH	1d 8h		Increased	Decreased	Decreased				Decreased		
Petrucello, 2016 (47)	105	0	29.4	Firefighter Turnout Gear	71-82F	18m										
Rauch, 1986 (53)	7	8	Not Reported	Mask only	Ambient air, not reported					No Change	Decreased					
Reardon, 1996 (55)	12	2	35.6	NBC	37.8C 50%RH	1h 47m	Minimal		Decreased		No Change			No Change	No Change	
Reardon, 1998 (54)	8	1	35.6	NBC	37.8C 50%RH	1h 47m										Decreased
Rose, 1987 (56)	12	0	23.5	NBC	37C 20% RH	12h	Moderate		Decreased	Decreased	Decreased			Decreased		
Ryman, 1988 (57)	24	0	23	NBC	33C 70%RH	3h 7m		No Change	Decreased							
Smith, 1996 (62)	15		30.3	Firefighter Turnout Gear	77-93C	16m	High		Decreased							
Smith, 1997 (63)	16	0	29.8	Firefighter Turnout Gear	89.6C	16m	Moderate					Increased				
Smith, 1998 (61)	10	0	34.4	Firefighter Turnout Gear	78C	7m	High				Decreased					
Smith, 2001 (64)	11		Not Reported	Firefighter Turnout Gear	Ambient air, not reported	18m		No Change								
Stein, 2010 (65)	15	4	23.5	Haz Mat suit	Ambient air, not reported	20m	High							No Change		
Szlyk, 1992 (67)	25	0	31	NBC	27.9C	2h 20m	Moderate	Increased								Decreased
Tharion, 1986 (70)	27	0		NBC	27.9C				Decreased			Increased				
Thornton, 1992 (72)	16	0	28.75	NBC	35C	4h 45m	Minimal	Increased			Decreased		Decreased	Increased	Decreased	Decreased
					40.5C	1h 19m										
Warren, 1988 (73)	12	0	21	NBC	22C	3h	Low					Increased	No Change	No Change		No Change

Table 4: Summary of Studies

Study	Similar demographics in exposure/control groups	Circumstances and mechanisms similar in exposure and control groups	Follow up Complete	How strong is association between risk and outcome	How precise is risk estimate	Are study patients similar to target population	Sufficiently long follow up	Similar exposure to target population	Were variables assessed effectively	Validity of assessment batteries	Total Points	Appraisal Score	Grade
Rauch, 1986 (53)	1	1	1	1	1	0	1	1	1	12	20	91%	A
Warren, 1988 (73)	1	1	1	1	1	0	1	1	1	8	16	89%	A
Kaufman, 1988 (35)	1	1	1	1	1	1	1	1	1	10	19	86%	A
Hamilton, 1982 (27)	1	1	1	1	1	0	1	1	1	4	12	86%	A
Hamilton, 1983 (26)	1	1	1	1	1	0	1	1	1	4	12	86%	A
Johnson, 1997 (33)	1	1	1	1	1	0	1	1	1	4	12	86%	A
Reardon, 1998 (54)	1	1	0	1	1	0	1	1	1	8	15	83%	A
Fine, 1987 (18)	1	1	0	1	1	0	1	1	0	12	18	82%	A
Fine, 1985 (19)	1	1	0	1	1	0	1	1	0	12	18	82%	A
Mitchell 1986 (41)	1	1	0	1	1	0	1	1	1	11	18	82%	A
Kobrick, 1985 (39)	1	1	0	1	1	0	1	1	1	4	11	79%	B
Stein, 2010 (65)	1	1	1	1	1	0	1	1	1	3	11	79%	B
Szyk, 1992 (67)	1	1	0	1	1	0	1	1	1	4	11	79%	B
Kaufman, 1987 (36)	1	1	0	1	1	0	1	1	1	10	17	77%	B
Kelly, 1987 (37)	1	1	1	1	1	0	1	1	1	9	17	77%	B
Reardon, 1996 (55)	1	1	0	1	1	0	1	1	1	13	20	77%	B
Tharion, 1986 (70)	1	1	0	1	1	0	1	1	1	16	23	77%	B
Thornton, 1992 (72)	1	1	0	1	1	0	1	1	1	16	23	77%	B
Caldwell, 2012 (14)	1	1	0	1	1	0	1	1	1	15	22	73%	B
Munro, 1987 (43)	1	1	0	1	1	0	1	0	1	6	12	67%	B
Ryman, 1988 (57)	1	1	0	1	1	0	1	1	1	5	12	67%	B
Smith, 1996 (62)	1	1	1	1	1	0	1	0	1	5	12	67%	B
Smith, 1997 (63)	1	1	1	1	1	0	1	0	1	5	12	67%	B
Smith, 1998 (61)	1	1	1	1	1	0	1	0	1	5	12	67%	B
Smith, 2001 (64)	1	1	1	1	1	0	1	0	1	5	12	67%	B
Rose, 1987 (56)	1	1	0	1	1	0	1	1	1	9	16	62%	B
Petrizzello, 2016 (47)	1	1	1	1	1	0	1	0	1	2	9	50%	C

Table 5: Study Appraisal