

Synthetic Turf/Tire Playground: Abrasions, Burns, Heat Stroke, Melted Cleats

SYNTHETIC TURF Skin Injury References

EXPOSED SKIN/BODY EFFECTS

*Universities like BYU: athletic fields unusable above 120° F; frame their guidelines around this fact.

115 °F



burns, dehydration, heat stroke

120 °F*

3 SECONDS
injure/burn; enough to require surgery



>120 °F scalds

140 °F

3 SECONDS
2nd degree burn

5 SECONDS
3rd degree burn



162 °F

human tissue destroyed on contact, damage so extensive possibility of no pain due to nerve damage



Sources:

<https://www.nist.gov/%3Cfront%3Efire-dynamics>

<https://www.reference.com/health/temperature-human-skin-burn-82a1af6b1322b289>

http://www.mountsinai.org/static_files/MSMC/Files/Patient%20Care/Children/Childrens%20Environmental%20Health%20Center/Fact%20Sheet%20-%20Back%20to%20School%20QA.pdf

http://www.synturf.org/images/Devitt_et_al_2008_art_turf.pdf

<http://lasvegassun.com/news/2009/jan/15/fake-grass-has-drawback-it-gets-too-hot-study-says/>

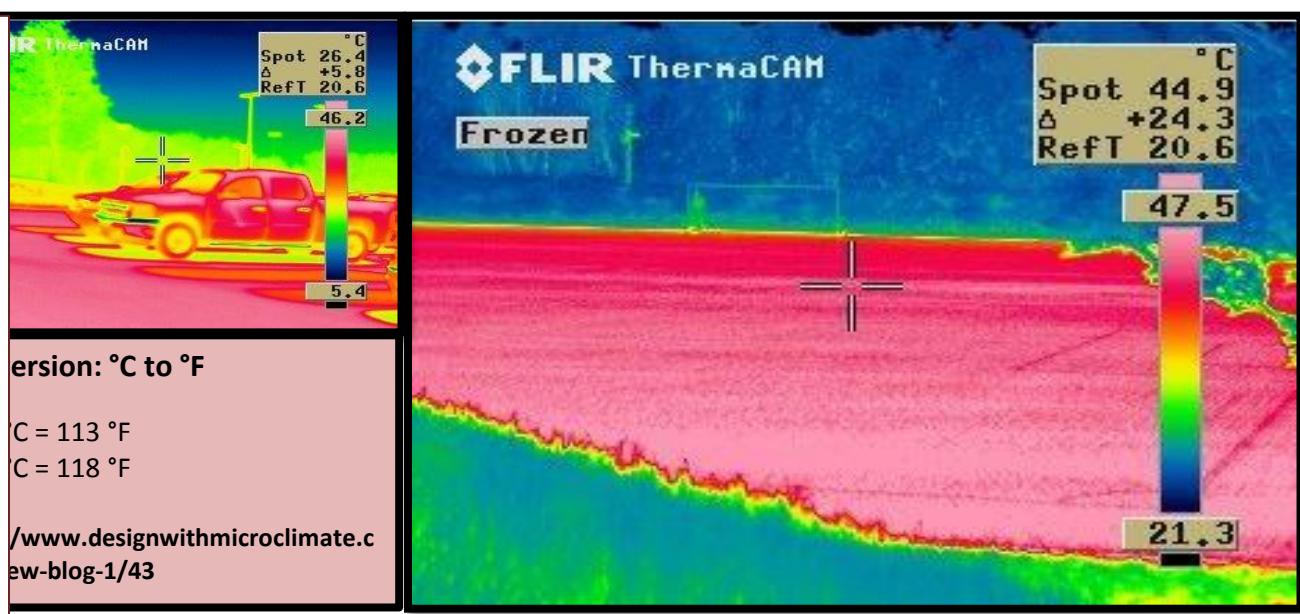
https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&ved=0ahUKEwiGnr20q4bPAhXHGz4KHVA TCd4QFggIMAE&url=http%3A%2F%2Fwellesley.ma.gov%2Fpages%2FwellesleyMA_SpragueResources%2FSynthetic%2520Surface%2520Heat%2520Study.doc&usq=AFOjCNHUko4eAocdC79J83YAs-OMFP_1Jw&cad=rja


<https://www.cpsc.gov/s3fs-public/5098.pdf>

<http://health.mo.gov/living/families/injuries/safety.php>










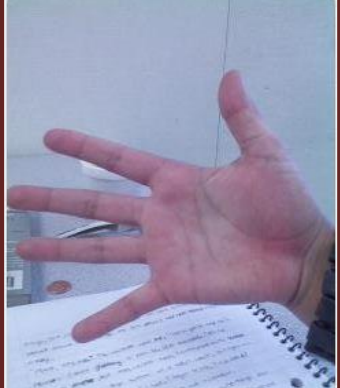



<http://www.npr.org/templates/story/story.php?storyId=93364750>

<http://emergencynurse-community.blogspot.com/2009/05/burns-thermal.html>





Number	Picture	Date	Time	Age	Injury/Event	State	ST Brand	Air Temp	ST/TPG Temp	Activity	Other Notes	Source 1
1-400		2013-2016	(Various)		U Abrasion (Turf Burn)	(Various)	(Various)	U		U (Various)	Over 400 abrasion (turf burn) posts (with photos only) were counted from 2013-2016 (August).	https://twitter.com/
401	(No picture)	8/12/2016	Late afternoon	14	Death	SC	U	U		U Football practice	Two athletic trainers and an assistant coach began CPR and used a defibrillator while awaiting paramedics. Players took water breaks every 15 to 20 minutes and water hoses and coolers were available at all times. Coroner says "...external environmental conditions such as the day's heat and humidity during football practice likely contributed to his death..." At 1:00 into YouTube video: "All right coach, this feels like a summer camp day but it is spring practice; as hot as summer camp." --News Reporter "Ha, ha, it's hot on [synthetic] turf..." --Coach. On Vine video: "Indian Land boys warming you. Very warm on the artificial turf" Probably meant to say "warning", but "warming" also fits description.	http://usatoday.com/
402	(No picture)	6/24/2012	U		U Death - Heat Stroke	AR	Symmetry Turf	92		U Installing ST	"Worker laying artificial turf died from possible heat stress." " OSH ACT of 1970 Section 5(a)(1): The employer did not furnish employment and a place of employment which were free from recognized hazards that were causing or likely to cause death or serious physical harm to employees in that employees performing installation of synthetic turf during elevated heat conditions were exposed to excessive heat: On or about June 24, 2012, employees performed tasks associated with the installation of synthetic turf at an outdoor football practice facility. According to the National Weather Service environmental data the mid-morning ambient air temperature was 92 degrees F, relative humidity 37%, and heat index of 93 degrees F. The employer failed to ensure that employees working outdoors were acclimatized to the heat and provided with a climate-controlled area to take breaks. Among other methods, one feasible and acceptable abatement method to correct his hazard is to establish a heat stress management program which incorporates guidelines from the ACGIH's threshold limit values and biological exposure indices and/or the National Institute for Occupational Safety and Health (NIOSH) document. "Working in the Hot Environments," and OSHA's Safety and Health Topics Page on Occupational Heat Exposure. Such a program may include, but is not limited to: " Forklift operator dies installing synthetic turf for a company named Symmetry Turf.	https://www.fox.com/
403	(No picture)	8/10/2014	Late afternoon	18	Death - Heat Stroke	MD	2005 - FieldTurf	86		U Football practice	"...On Aug. 24, Meadow died from heatstroke after being hospitalized for two weeks. The player fell ill after he became disoriented during an approximately hour-long workout on Aug. 10. The Bears typically do not schedule practice on weekends, but on Sunday, Aug. 10, the players had a workout. At the end of the evening session a trainer noticed a shift in Meadow on the field and escorted him to the bench, according to Morgan State spokesman Clint Coleman. Based on his responses, the trainer called 911..." "No one really knows why this happened because the practice was not very long, the weather was not extremely hot and there was certainly plenty of water to be had," says Coleman. "They didn't have on gear, pads, no equipment--it wasn't a hitting workout--it was only a conditioning workout..."	http://www.fox.com/
404	(No picture)	8/1/2001	Morning	27	Death - Heat Stroke	MN	U	110 (heat index)		U Football practice	"...Stringer, 27, a 6-foot-4-inch, 335-pound league all-star who was entering his seventh professional season, complained of exhaustion after being unable to complete practice on Monday morning in the Vikings' first practice of training camp and was carted off the field. He did not practice Monday afternoon, and he vowed to return on Tuesday for the morning session, which he did. It lasted nearly two and a half hours, and players were in full pads. Temperatures hovered above 90 degrees and the humidity was stifling. The heat index, combining the effects of temperature and humidity, hit 110. Stringer vomited three times in practice and walked to an air-conditioned shelter. There he complained of dizziness and became weak and began breathing heavily. Stringer was driven by ambulance to Immanuel St. Joseph's-Mayo Health System, where his temperature was 108 degrees upon arrival. He was unconscious until he died at 1:50 a.m..."	http://www.fox.com/
405	(No picture)	9/2/2014	10:45 AM	16	Death - Heat Stroke	NY	as of 2010 - AstroTurf Game Day Turf	78-80		U Football practice	"...A 16-year-old Curtis High School student has died after collapsing during varsity football practice Monday morning...Kirkland, who stood at 6 feet 2 inches tall and weighed 295 pounds, played as an offensive and defensive lineman, according to a scouting report for the upcoming season. He saw significant playing time on the varsity as a sophomore and was slated to be a starter this season at right guard...According to Accuweather, the temperature at 10 a.m. Monday was 78 degrees with 75 percent humidity. At 11 a.m., it measured at 80 degrees with 72 percent humidity. The Public School Athletic League, which covers only public high schools, requires all exercise to stop if the temperature reaches 85 degrees and the humidity reaches 80 percent. If the humidity is between 50 and 80 percent, the PSAL rules warn, "extreme caution must be exercised." Last August...[another] student who died after being overcome by heat during a late afternoon-early evening practice on July..."	https://www.fox.com/
406	(No picture)	7/23/2012	Late afternoon/evening	15	Death - Heat Stroke	NY	as of 2010 - FieldTurf	U		U Football practice	"The family of a New York teenager who collapsed while practicing with his high school football team and later died of heat stroke claims that the boy's coach ordered him back onto the field when he tried to leave practice early...Dellaventura struggled to keep up with the pace of that day's practice session with the football team at St. Joseph-by-the-Sea High School on Staten Island. At one point, Dellaventura allegedly paused before head coach Salvatore Ferraioli shouted something that prompted Dellaventura to continue. "These kids were winded," DeSimone told the Post. "Nicholas had pulled himself off the field because he couldn't do it anymore, and he was told to go back and finish the practice"...Ferraioli denies forcing Dellaventura back onto the field that day. His attorney laid the blame at the feet of Dellaventura's mother, whom he says sent her son to practice with a fever after a cut suffered on vacation had become infected. Dellaventura's family also alleges in the suit that the school did not move fast enough when Nicholas collapsed, did not have a trainer on site during the practice, and did not warn the kids about the dangers of heat stroke. In response, the school's athletic director Greg Manos told the Post that the school followed state-mandated protocols and did not start practices until 5 p.m."	http://www.fox.com/
407	(No picture)	9/9/2016	Evening	17	Death - Heat Stroke	TX	2012 - Artificial/Synthetic Turf	U		U Football game	"A Shadow Creek High School football player died after suffering from heat-related complications." On the football schedule, it lists the game was played Away at Saint Mary's Hall High School. "The Shadow Creek Sharks football team won Friday's away non-conference game against Saint Mary's Hall by a score of 27-14."	http://foxsports.com/

Number	Picture	Date	Time	Age	Injury/Event	State	ST Brand	Air Temp	ST/TPG Temp	Activity	Other Notes	Source 1
408	(No picture)	4/20/2016	Evening	14	Death - Heat Stroke	NV	2006 - Artificial Turf		measured there as high as 169	Football game	Green Machine football website asks players to enter on the Decatur side, which is where the artificial turf fields are. "...A 14-year-old football player died on the field Monday night. Issaiah Abrego collapsed during halftime at Ed Fountain Park, and now his family wants to know why...He says he saw his star tackle collapse in front of his mother during half time..."	http://www.
409	(No picture)	7/7/2015	Late afternoon	14	Death - Heat Stroke/ Hyperthermia	IN	2007 - FieldTurf	86 (high)		Football practice	"A Pike High School sophomore who died in July during football practice had heat stroke and hyperthermia, the Marion County Coroner's Office confirmed. Collin Kelly, 14, died July 7, the day after suffering a medical emergency at a no-pad, no-contact conditioning practice. A teammate of Kelly's said at the time that the team completed 36 runs from sideline to sideline when he noticed Kelly was having problems. "When we were done with that, we were all in a huddle," Demontai Franklin said. "I was on the other side of the huddle, but he passed out or something. Like, blacked out. We tried to stand him up but he couldn't stand up. So we got some nurses out there and the nurses rushed him to the hospital." The day's high temperature was 86 degrees..."	http://www.
410	(No picture)	7/28/2015	Late afternoon	16	Death - Heat Stroke/ Hyperthermia	TN	U	109 (heat index)		Football practice	"...Tekarian...died Wednesday evening after he was airlifted to Le Bonheur Hospital in Memphis an hour after arriving home from football practice, where emergency medical workers had been called after he complained of shortness of breath. Tekarian was 16 and a rising junior at Haywood High School n Brownsville... The National Weather Service had issued a heat advisory for the entire day until 8 p.m. Wednesday, and that was upgraded to an excessive heat advisory at 3:26 in the afternoon... TSSAA regulations stipulate practice for any sport cannot happen outside if the heat index exceeds 104 degrees..." "Tiffany Worles spoke...about the extreme dehydration and heat exhaustion her son suffered after football practice Tuesday morning. A day later, another Tomcat football player, Tekarian Maclin, died... Worles said her son, Darrian, also had to be hospitalized after practice. "He was close to dying — he was close to death," she said. "He had no body fluids. His lips were blue. His eyes were sunk in the back of his head. He couldn't urinate." Worles said Darrian called her from practice Tuesday complaining of severe leg cramps. She said once he got home he collapsed in the doorway of the family apartment. Once at Jackson-Madison County General Hospital, doctors told Worles her son had severe heat exhaustion and dehydration. Worles said she reported the incident to school officials one day prior to Maclin's death. "He said when it reaches 104 we don't practice. I said, well, it was 104 before Darrian had even left the house," Worles said. Darrian was released from the hospital Tuesday. He said he began feeling better until he heard of the death of his teammate. "I truly believe he died because of the heat," he said. Worles said the heat was too much for her son and the entire team. "If they had took into consideration what had happened with Darrian, maybe another child would not have lost his life due to the same issue," she said. State regulations require football players to stop outdoor practices if heat indices go higher than 105 degrees. Meteorologists say the heat index hit 109 degrees in Haywood County by 11 a.m. Wednesday. "I didn't want to be in the heat myself, but we've got to do what coach tells us to do. I hope nobody else dies," Darrian said."	http://usat
411-414		8/4/2015	Late afternoon	14-18	Elbows - burns	WV	FieldTurf	91		Bear crawls on ST, on forearms and knees	Atlas Track and Tennis Inc. merged with Beynon Sports, owned by Tarkett, who also owns FieldTurf.	http://www.
415	(No picture available)	7/2/2008	U	1	Feet - burns	NY	U	U		Stepping on tire U mats	Parker "...spent three days in New York-Presbyterian/Weill Cornell's burn center..."	http://www.
416	(No picture available)	2006	U	1	Feet - burns	NY	U	U		Walking on tire surface of splash U pad	"...As soon as she had put her feet on this mat, ultimately the second that her feet had touched that ground it immediately melted the skin on her feet," said Chris Kern, Isabella's father. Isabella spent five days at the Cornell burn unit and couldn't walk for nine days..."	http://www.
417		6/24/2013	11:04 AM	U	Feet - burns	U	U	U	U	Ultimate Frisbee	Playing barefoot on a rough turf field for only 10 minutes!	http://sludge
418		8/21/2013	Afternoon	1	Feet - burns	TX	U	U		Walking on tire surface of splash U pad	N/A	http://www.
419		5/1/2007	U	2	Feet - burns	NY	U	U		Walking on tire surface, safety U mat	N/A	http://www.
420	(No picture available)	8/17/2011	Afternoon	2	Feet - first- and second-degree burns	PA	U	U		Running on tire surface of U playground	N/A	http://www.
421		6/25/2015	U	1	Feet - second-degree burns	TX	U	U		Walking on tire surface of splash U pad	N/A	http://www.
422		7/1/2004	U	1	Feet - second-degree burns	NY	U	U	167	Running from sprinkler to tire black protective area	received injury in two seconds. "Mehran-Lodge was just one of more than a dozen children who faced similar injuries."	http://www.
423	(No picture available)	7/5/2008	U	33	Hands - blisters	NY	FieldTurf or AstroPlay	U	160	Playing on ST field at park	"...My feet always blister coming out here. The bottoms of my shoes feel like melted rubber, it gets so hot," said Luis Coronell, 33, who regularly takes his 10-year-old nephew, Andres, to play on turf field because there are no real ones in the neighborhood..."	http://www.

Number	Picture	Date	Time	Age	Injury/Event	State	ST Brand	Air Temp	ST/TPG Temp	Activity	Other Notes	Source 1
424		4/19/2014	U		U Hands - burns	U	U	U	U U	N/A		https://twitt
425-437	(Pictures taken by school)	8/25/2016	Late afternoon	14-18	Hands - burns, blisters	MA	2006 - FieldTurf	80	150	Bear crawls on ST	"...Some of the blisters were as large as a silver dollar. Some parents called the injury just blisters, others described the injuries as "turf burns" that blistered..."	http://framir
438-441	(Pictures taken by school)	10/9/2015	U	14-18	Hands - burns, blisters	VA	2014 - FieldTurf	90		Bear crawls and U up-downs on ST	After three of four players showed coach blisters on hands, they were asked to do up-downs on ST.	http://www.
442		8/22/2012	Late afternoon	15	Hands - burns, blisters	TX	2009 FieldTurf Pro Series Duraspine monofilament	96		U Bear crawls on ST	Less than 200 yards before injury	http://www.
443		9/14/2015	Late afternoon	11	Hands - burns, blisters	TX	U	U	U Bear crawls on ST	N/A	http://www.	
444		8/1/2003	Afternoon	22	Hands - second-degree burns	KS	Prior to 2009 - AstroPlay, 2009 - FieldTurf	U	U	U Bear crawls on ST	N/A	http://www.
445		8/20/2013	4:46 PM		Hands - second-degree burns	U	U	U	U Bear crawls on ST	"Well looks like I won't be able to masterbatr play xbox for a while... #HotTurf #BearCrawls"	https://mobi	
446-458		9/10/2015	Late afternoon	14-18	Hands - second-degree burns, blisters	CT	U	U	150 Bear crawls on ST	N/A	http://wwip.	
459		7/1/2016	U		Hands - second-degree burns, 1 blisters	TN	U	90	U Landing on a [tire] rubber mat with palms down	"...the 14 month old went down a slide and landed on a rubber mat with his palms down, causing second degree burns to his hands. 'Second degree burns, burns that bubble, blister...'" and "...being treated at a burn center in Georgia..."	http://www.	
460		9/28/2015	3:10 PM		Hands - second-degree burns, blisters	U	U	U	U U	"When the turf is so hot it literally burns and melts your skin :-)"	https://twitt	
461		7/17/2012	3:53 PM		Hands - second-degree burns, blisters	U	U	U	U U	"You simply get burned after playing on turf"	https://twitt	
462		5/20/2013	3:33 PM		Hands - second-degree burns, blisters	U	U	U	U U	"Hand burned from turf of the field. Didn't slide, just the sun beating down on rubber. Not a sunburn. #FREAKINGTURF"	https://twitt	
463		8/4/2016	8:01 PM		Hands - second-degree burns, blisters	WI	U	U	U U	"My son burned both his hands during football practice on artificial turf, never seen this before."	https://twitt	
464		7/1/2012	1:00 PM		Hands - second-degree burns, blisters	U	U	U	U U	"Let this be a lesson to all of you: don't do bear crawls on turf without gloves, your hands have a tendency to slide..."	https://twitt	
465		8/28/2012	9:12 PM		Hands - second-degree burns, blisters	U	U	U	U Bear crawls on ST	"Won't be late to weights again! Bear crawls on hot turf #blisters #burnedmyhands #ouch"	https://twitt	

Number	Picture	Date	Time	Age	Injury/Event	State	ST Brand	Air Temp	ST/TPG Temp	Activity	Other Notes	Source 1
466		8/5/2015	Late afternoon	15	Hands - third-degree burns	TX	U	U		Bear crawls on ST	N/A	http://www
467-488	(No picture available)	10/17/2015	Late afternoon	14-15	Hands and Knees - burns	CA	2015 - AstroTurf Gameday Grass	U		Bear crawls and crab walks on ST	"...The football players after complaining of the burns were sent to the team athletic trainer John Rentar who provided first aid treatment for their burns. A few days later the school nurse, after examining a few of the player's blistered hands, called parents to inform them that they needed further medical treatment for possible infections...The mother of the 14-year-old player said she wasn't aware of the situation or her son's wounds until a few days later, when the school called and promptly informed her that her son was in need of hospitalization..." <p>At Fresno State football player is recovering - but not yet recovered - from a burn with heatstroke that knocked him comatose for two days...Shane Gama is a 20-year-old who weighs more than 300 pounds and earned second team all-conference honors last year as a junior college offensive lineman.</p> <p>But his organs overheated when he suffered heat stroke during Fresno State strength and conditioning workouts. At that point, he was just struggling to survive.</p> <p>Two days later, he emerged from a coma. A week after that, he's approaching normal...I'd love to get back on the field, but that's something I have to talk to my school doctors about."</p>	http://myval
489	(No picture)	7/15/2016	U	20	Heat Stroke	CA	2011 - FieldTurf Revolution PF/PRF	U		Football practice		http://abc30
490	(No picture)	8/17/2015	Morning; before 10:00 AM	16	Heat Stroke	NY	2015 - (most likely Sprinturf who sells CoolFill brand)	U		Football practice	"Nikolas Visco, a junior on the Riverhead High School football team, is currently at Stony Brook Children's Hospital after suffering from apparent heat stroke following the team's first official practice Monday morning, according to school officials. <p>Visco is listed in critical condition, according to a Stony Brook Medicine spokeswoman... 'He's sedated,' he continued. 'They're trying to keep it so the body has no stress whatsoever.'</p> <p>It was at the conclusion of Monday morning's practice, after Shay addressed the team, when the players gathered together, raised their helmets in the air and yelled, 'Family!' The players then started to disperse and head off the practice field when it was noticed that Visco had collapsed in the middle of the field. The school's trainer, Chris Hildebrand, quickly attended to him with others...Visco had a 108-degree fever and had lost consciousness. Visco was later transferred to Stony Brook, said Carney.</p> <p>The Blue Waves wrapped up the first of two practices Monday at around 10 a.m. Section XI rules currently dictate that practices prior to the start of school season cannot take place between 10 a.m. and 5 p.m. to guard against players succumbing to heat.</p> <p>Even though no heat alert had been issued Monday by Section XI, the team was practicing 'as if it was a modified heat alert,' Carney said. The players were given water breaks and practicing in T-shirts and shorts, she said..."</p>	http://riverh
491	 May 12, 2013 Twitter: @samkerr1	5/12/2013	7:35 PM	19	Leg - abrasion (turf burn)	NY	FieldTurf	U		Soccer	N/A	https://coac
492	 January 24, 2014 Twitter: @Nangerer	1/24/2014	U	34	Leg - abrasion (turf burn)	U	U	U		Soccer	N/A	https://coac
493		8/27/2016	11:14 AM	14-18	Leg - abrasion (turf burn)	MA	2014 - FieldTurf	U		Football	N/A	https://twitt
494	 April 14, 2013 Twitter: @sydneyleroux	4/14/2013	6:30 PM	23	Legs - abrasion (turf burn)	MA	FieldTurf	U		Soccer	N/A	https://coac
495	 It's so hot in Texas, turf is melting cleats	8/10/2015	3:59 PM	17	Melted cleat	TX	2012 - Hellas Matrix artificial turf	U		Football practice	N/A	https://twitt
496		8/8/2011	Unknown	U	Melted cleat	IA	U	U	130	Soccer	N/A	http://forum
497		7/19/2012	3:08 PM	U	Melted cleats	U	U	U	U	U	"The turf was so hot at our team run this afternoon, it melted through the adhesive on my cleat. #NoJoke"	https://twitt
498		8/26/2014	4:42 PM	U	Melted cleats	U	U	U	U	U	"Week old cleats literally melted apart on the turf today at practice"	https://twitt
499		9/30/2012	10:57 AM	U	Melted cleats	LA	U	U	U	Flag football	"@MikeCoppage this is what my flag football cleats from college looked like after LSU field turf melted glue last game"	https://twitt
500		6/28/2014	9:00 AM	U	Melted cleats	U	U	U	U	U	"bruuuh the turf melted my bro @goldan_child cleats ☹️☹️☹️"	https://twitt

Number	Picture	Date	Time	Age	Injury/Event	State	ST Brand	Air Temp	ST/TPG Temp	Activity	Other Notes	Source 1
517		6/16/2015	12:37 PM		Melted thick water bottle U	U	U	U		U U	"When you're at lax camp and it's so hot on the turf your water bottle melts. #98degreesandrising #offseason #hardwork"	https://twitt
518		2/8/2016	7:14 PM		Melted tire crumb on cleats U	U	U	U		U U	"Wow I love having melted turf on my cleats 🙄🙄🙄"	https://twitt
519	(No picture available)	Fall 2015	U	16	Toes - burns	CT	2001 - FieldTurf, 2015 - Sprinturf	U		Football barefoot runs (as instructed by U coach)		http://www